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HOW TO IMPROVE THE TREATMENT OF FRACTURES*

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IT IS appropriate to list this communication with war papers. There is no war work more important than that the medical profession should adjust itself to better results in the case of the injured. To accomplish this, and to have the hospital and the personnel of the hospital up to date when the war is over and the younger men return from the active war front, will be well worth while. It is to this end that I address you today, urging a real war effort.

Every member of the Society, no matter with what subject in medicine or surgery he is primarily concerned, should be familiar with first-aid care and transportation of the injured. The treatment of fractures, however, is very special work, and demands a doctor who has had a general surgical training. The art of surgery has been for years far in advance of all the sciences on which its future depended. Today, the sciences are overtaking the art and form the basis of sound treatment. Chronic duodenal and gastric ulcers were permitted to advance to perforation, peritonitis and fatal hemorrhage until comparatively recently. Injuries to the head, with or without fracture of the skull, invariably received a decompression operation, done by the surgeon first seeing the case. Today, one almost never hears of or sees a decompression operation because, with an increasing knowledge of the cerebrospinal fluid and its behavior following a blow on the head, especially with increasing signs, a diagnostic and sometimes a therapeutic lumbar puncture may be employed by the attending surgeon.

Fractures are now unwittingly allowed to go beyond the time at which successful treatment may be instituted. Such delay forever precludes the possibility of preventing disabling deformity. In some of these cases even death itself might be preferred to the permanent disability with which all are familiar.

The accident causing a fracture is instantaneous. The reparative processes begin immediately and treatment should therefore begin without delay so that the reparative processes may be facilitated instead of hindered. By treating a fracture instantly, one treats the fracture alone; by treating it after delay, one treats the fracture together with its complications. Ordinarily, prompt treatment is easy; frequently, delayed treatment is difficult. Furthermore, delayed treatment is dangerous, and late treatment is lamentable.

During the course of years, fundamentals are bound to change. One cannot wish broken and displaced bones into position and cause them to unite by moral suasion, sending the patient on his way without a hitch. The methods available to the surgeon who deals with trauma are remarkable, and compel a modification of what once were regarded as fundamental principles. This is as it should be. We must not be bothered or alarmed by these tendencies; they all indicate improvement.

What can be done in Massachusetts to improve the results following the treatment of fractures? Some suggestions follow.

Proper first-aid care must be given to injured people. It is a fact of great importance that few practitioners of medicine and surgery in the United States are familiar with first aid. The war has stressed the value of first aid and has increased information about it among laymen. Physicians, in self-defense, are being obliged to learn something about it.

The injured should be immediately transported to a hospital. The American Red Cross textbook on first aid, which is used as the basis for instruction in first-aid care, is excellent. It contains more good methods of transportation than poor ones. It is not, however, perfect, and certain improvements will undoubtedly be made in subsequent editions. How should one transport to a hospital a man who has fallen from a tree and injured his back, or one with a probable broken neck? Can you answer these questions satisfactorily? You should be able to, because you may have to take care of someone who knows how these things ought to be done.

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An x-ray examination must be made to learn accurately the problem at hand. Adequate x-ray films should be taken to confirm and enlarge in detail the clinical diagnosis. I recently saw a switchman who had fallen from a boxcar and complained of pain in the back. Perfect x-ray films had been made, but for the sake of economy the films had been taken only from the second lumbar vertebra down to include the upper third of the femur. The patient was treated for seven weeks by rest in bed because there were no evidences of fracture in the parts x-rayed. After working for a month, he again complained of pain in the back. New x-ray films were taken, including the whole lumbar spine. A compression fracture of the first lumbar vertebra was seen and treated. This lesion was missed in the first instance because of inadequate x-ray films.

The doctor must evaluate his ability to treat the injury. Suppose that he is examining a child with a fracture of a long bone, having been called by the parents. Why was he called? The ordinary reason given is that he is regarded as the family doctor. He delivered the mother of this family of all her children. The mother says, "We have confidence in you." It is true that he has been caring for this family for years. But the notion that any doctor can treat a fracture is less prevalent than it used to be. This imaginary case raises the question of the competency of a doctor to treat a fracture. There should arise in his mind the questions, "Am I prepared to treat this fracture? Do I know how to find out exactly what the damage is? Am I competent to decide what is to be done in this particular case, and to do it?" The doctor may say to himself, "I need the money. I can take care of this fracture. The family thinks I am able, and that is a great asset. I will make a bluff at it, and if I get stuck, I shall call for help." Under the economic conditions of today, it may be difficult for a doctor to give up such a case.

If the physician is unable to give proper treatment, he must call a good consultant as soon as possible. By securing advice early, he may prevent a Volkmann's contracture. To cite an example, in a town not far from Boston, I held a fracture clinic. Cases were brought to the clinic from outlying districts. Seven children came in, each with an established Volkmann's contracture following a supracondylar fracture of the humerus. No splints or bandages had been used. These cases point a moral and dramatically accentuate the importance of properly treating injuries in the region of the elbow joint. Each of these bad results might have been avoided. Unwarranted responsibility is a risk to the patient and to the reputation of the doctor. If the attending physician asks for an early consultation, he gives both his patient and the consultant a better chance. He rises in the esteem of his patient and in the good will of the community in which he practices.

Associated injuries must be recognized. The fracture of the bone in any case may be the least important of the injuries received. There may be injuries to the brain, spinal cord, or lung, with an associated pneumothorax or a hemopneumothorax; injuries to the abdominal viscera, with hemorrhage into the abdominal cavity, and possibly with rupture of the viscera; or injury to the urinary bladder, associated with fractures of the pelvis.

One does not have to qualify as a neurosurgeon, a thoracic surgeon, a genitourinary surgeon, an abdominal surgeon, an orthopedic surgeon or a vascular surgeon, but anyone treating a fracture should be familiar with the fundamentals of these special branches of surgery so that he may know when there is need for consultation with a specialist.

In treatment, the doctor must use a method with which he is perfectly familiar. If a surgeon has been securing good functional results by the use of certain methods, he should by all means continue to use them. Nevertheless, I wonder how many of you are familiar with your results in the treatment of fractures.

One should be conversant with known operative procedures and results. There are fractures that should be treated initially by operative methods when the local equipment is available and intelligently used.

One should be familiar with nonoperative treatment. Nonoperative methods may require great skill. Their results are often brilliant.

More pull and less manipulation should be employed in treating any fracture. Far greater initial traction should be used, for sufficient traction may bring about reduction of the fracture. Instead of using 5 or 10 pounds of traction at the beginning of treatment, and gradually increasing it, ordinarily one should begin with 25 or 30 pounds.

The period of aftercare or convalescence is a time of great importance. This should be regarded as a time of active treatment. One reason for Dr. Otto Hermann's successful treatment of fractures of the os calcis at the Boston City Hospital is dependent in great measure on his supervision of the minute details of the aftercare of these cases. In the convalescing period one may profitably spend a little time instructing the patient in muscle re-education, weight bearing, correct shoes, exercises and the use of crutches, and may thus gain the patient's confidence and directly influence the result of treatment.

In the United States and in the provinces of Canada, the American College of Surgeons has already established ninety regional fracture committees, with the object of improving fracture treatment in these communities. Obviously, certain states have more than one committee. Texas, Pennsylvania, New York, Indiana, and California are splendidly organized, and are accomplishing much. Massachusetts has a regional committee, with sixteen subcommittees, in Lowell, Beverly,

Quincy, Northampton, Gardner, Melrose, Haverhill, Cotuit, Brockton, Greenfield, Taunton, Worcester, Newburyport, New Bedford, Springfield and Pittsfield, which carry on their work through the local hospitals. During the past week, I received a report on the activities of the Flint (Michigan) regional committee, which reads as follows:

> We have had fracture conferences of my staff each Friday, from 4.30 to 6.30 p.m. All fracture problems of the previous week are discussed at these meetings, and they represent 85 per cent of the cases of fracture admitted to the Hurley Hospital. Similar meetings are held at selected intervals for the Fracture Service of St. Joseph's Hospital in this city. All fracture cases are assigned to members of the fracture services, and these are presented, both formally and informally, as the need arises.
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> All the ambulance drivers have received adequate first-aid instruction through various agencies, and each ambulance is equipped with splints, which, with few exceptions, are properly used. Patients are being brought to the hospitals with some type of splinting apparatus, usually a Thomas splint for the lower extremity, and a Murray–Jones splint for the upper extremity.
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> Fracture cases of all kinds at Hurley Hospital from July, 1941, to July, 1942, numbered 1085. About eighty per cent were handled by my staff and myself, either as staff or private cases, and the remainder were cared for by surgeons handling the occasional fracture. The latter situation is unavoidable inasmuch as Hurley Hospital is an open hospital. However, we are able to control the minor percentage by example, and through the co-operation of the X-ray Division. These patients are, in our opinion, handled according to the prevailing standards that we have been able to establish by this persistent method of fracture education in this community over the past twelve years.
>
> We keep a book in which every fracture admitted to the hospital is tabulated. We also keep a conference book, in which important comments during reviews of the x-ray films are noted. Furthermore, pertinent recent information regarding this division of surgery is posted on a bulletin board in the emergency room for the Department of Traumatic Surgery. We manage to keep one live research problem under way each year.
>
> We have nine members on the regional fracture committee.

I believe that your personal co-operation with the several regional fracture subcommittees in Massachusetts along the lines suggested in this report from Flint, Michigan will help very much in improving the results of fracture treatment. Find out who is the chairman of the subcommittee nearest your town. If you are a consultant at the local hospital and if you are on active duty there, try to initiate a follow-up of the cases of fracture, and analyze these results at some regular staff meeting, showing the x-ray films. It makes no difference how few cases of fracture are treated at your hospital. These cases should be carefully studied by the whole staff. Invite doctors to the hospital meetings so that all in your community may profit by a review of the cases. Consider seriously the ten or twelve suggestions I have made as guides. There is no reason why Massachusetts should not stand abreast of the advances taking place in fracture treatment at this time. Each one of us can help.

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DIVERTICULITIS OF THE COLON*

A Review of the Literature and an Analysis of Ninety-One Cases

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DIVERTICULUMS of the large bowel were noted by Friend as early as 1730, but a disease entity was not ascribed to them until Cruveilhier's work in 1849. Ten years later the first report of a complication of rupture — a sigmoidovesical fistula — was made by Jones, but little attention was paid to the condition until W. J. Mayo[1] in 1907 described resection of the sigmoid in 5 cases of chronic obstructive diverticulitis. The value of the roentgen ray as an aid in diagnosis was not fully appreciated in this country until 1915.[2] Since then there has been a gradual evolution in the technic of handling these cases — from radicalism to conservatism. The disease is of relatively common occurrence, errors in diagnosis are not infrequent, and both the morbidity and mortality are altogether too high.

INCIDENCE, AGE AND SEX

The incidence of diverticulosis of the colon — a prerequisite of diverticulitis — has been estimated at 3 to 10 per cent. A compilation of statistics[3–8] shows an incidence of 5.2 per cent in 70,572 colons examined by barium and autopsy. It is difficult to obtain significant figures on the percentage of cases of diverticulosis progressing to diverticulitis. It is usually stated that from 12 to 15 per cent do so, but in three series totaling 3915 cases with diverticulosis of the colon the incidence of diverticulitis was 34.3 per cent.[6, 7]

Of patients with diverticulitis about 22 per cent are operated on.[9–12] Because, however, of the trend in treatment away from surgery and the significant number of patients operated on with erroneous diagnoses, the actual percentage of cases of diverticulitis reaching the operating table is probably lower than this. Arnheim[13] collected from the literature 3399 cases of diverticulitis and found complications that might have necessitated surgery in 15 per cent — perforation with abscess formation or general peritonitis, peridiverticulitis with formation of a tumorlike mass, and sigmoidovesical fistula.

Diverticulitis is primarily a disease of adult life. Brown[10] has estimated that only 0.3 per cent of all

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cases occur below the age of thirty; Bailey,[14] that over 95 per cent of the cases occur in people over forty. Although diverticulitis is by no means uncommon in the fourth decade, Brown[10] and Kocour[4] report the peak incidence as being in the fifth decade, and Cleland[15] as in the sixth.

The sex ratio varies in different reports from that of Walkling[8] (slightly more men than women) to those of Graham,[16] Brown[10] and Bailey[14] (three men to one woman).

Etiology and Pathogenesis

There are two types of diverticulum, the congenital and the acquired. The former, which is rare, is a pouch consisting of all layers of the bowel wall; the latter is a herniation of the mucosa through a defect in the muscular layer. Although the etiology of the acquired type is unknown, there appear to be numerous contributing and predisposing factors: mechanical — overdistention from constipation, excess gas and feces, with pushing of the mucosa through the muscular layers — and degenerative — that is, changes due to age, weight and irritations and to putrefactions that cause fatty degeneration of the musculature, with loss of elasticity and proliferative trabeculations, irregularities and fissures of the mucous membrane.

In diverticulosis the diverticulum communicates freely with the bowel lumen, filling and evacuating readily. Inflammation sets in when, owing to irritation or occlusion by a fecalith, the narrow neck of the diverticulum becomes edematous, preventing easy emptying. The localized inflammation spreads to the adjacent segment of bowel, causing irritability, spasticity and tenderness.

Progress continues in one of two directions: acute perforation into the free peritoneal cavity, with an acute diffuse peritonitis, or peridiverticulitis and pericolitis. This second stage may progress in one of three directions: gradual subsidence, infiltration of the bowel wall with fibrous tissue, narrowing and gradual obstruction and abscess formation. Finally, the infiltration may necessitate resection or the abscess may either subside or perforate into the free peritoneal cavity, intestines, bladder, abdominal wall or retroperitoneal tissues.

Symptomatology

Diverticulitis is a disease of protean manifestations, and diagnosis is often difficult. Even the differentiation of diverticulosis and diverticulitis is not always obvious. The former condition is supposedly asymptomatic, but Willard and Bockus[17] have described a syndrome associated with and apparently due to it consisting of intermittent diarrhea, constipation, epigastric pain or distress, flatulence and general abdominal pain. This is the so-called "irritable colon" syndrome, and the problem is to determine when mild inflammation (diverticulitis) is actually present. The question seems to be more academic than real.

The classic syndrome of diverticulitis consists of pain in the left lower quadrant of the abdomen, low-grade fever, slight leukocytosis, flatulence and slight nausea, but this textbook picture is all too uncommon. The patients with mild, so-called "chronic nonperforating" cases may have no more than recurrent attacks of mild abdominal soreness or cramps, especially below the umbilicus, flatulence and irregular bowel habits, with diarrhea and constipation and, occasionally, bleeding from the rectum. Now and then there is only diarrhea, increasing constipation or rectal bleeding. Physical examination is, for the most part, negative; the temperature and white-cell count are usually normal but occasionally slightly elevated. As the disease progresses the symptomatology becomes more marked. There is distinct abdominal pain, usually in the lower half of the abdomen, being not infrequently localized in the left lower quadrant and sometimes in the right lower quadrant or left side. There is a history of irregular bowel habits — constipation and diarrhea, occasionally bleeding and rarely small stools. There may be a feeling of incomplete or unsatisfactory bowel movements on the one hand or relief of symptoms following defecation on the other. Nausea and vomiting are not infrequent. Some patients have frequency, nocturia or burning, giving rise to a suspicion of disease of the urinary tract. There is frequently tenderness on palpation, usually in the lower abdomen. Fever and leukocytosis are more frequent in the severe cases than in the mild ones.

As the complications of simple diverticulitis become manifest, the symptomatology becomes consistent with each, so that if the possibility of diverticulitis is always kept in mind and the various stages in the pathogenesis are considered, the diagnosis may be made oftener than otherwise. Thus, a sudden, acute pain in the abdomen suggests acute perforation with peritonitis; a mass in the left lower quadrant indicates an indurated, thickened sigmoid or a localized abscess; obstipation may mean inflammatory and fibrotic closure of the sigmoid; sudden disappearance of a mass, relief of pain and the appearance of pus from the urethra or rectum suggest perforation of an abscess with formation of a fistula.

The presence or absence, frequency and significance of bleeding in diverticulitis have received some consideration. Bleeding occurs in 5 to 17 per cent of cases.[18, 19] Rarely massive hemorrhage is the presenting symptom,[20, 21] and Germain and his associates[22] report a purely hemorrhagic form. On the other hand, Rankin and Graham[19] and Hayden[3] believe that bleeding is not a symptom of diverticulitis and is therefore of little significance.

Diagnosis

In addition to the history and the physical examination, the sigmoidoscope and the barium

enema are used in arriving at a diagnosis. A negative examination by either method does not, however, exclude a diagnosis of diverticulitis. Only rarely can diverticular openings be seen with the sigmoidoscope, but there are definite changes in the bowel suggestive of the diagnosis — spasm, hypermotility with varying degrees of obstruction, immobility, sharp angulation, mucosal edema and signs of an extraluminal mass. Jackman and Pumphrey[23] made a correct diagnosis of diverticulitis in 66 per cent of a series of cases from sigmoidoscopy alone. Diverticulums were seen, however, in only 14.5 per cent. Brown and Marcley[11] found that suggestive evidence could be discovered by sigmoidoscopy in only 24 per cent of 218 cases, and diverticular openings in only 9 per cent.

The barium enema is the most accurate diagnostic procedure. Figures on the percentage of accuracy are practically nonexistent. In a series of 30 cases reviewed by Graham,[16] diagnosis by x-ray was correct in only 57 per cent, indeterminate in 17 per cent, and wrong in 26 per cent. Of the cases that were wrongly diagnosed, 4 were called diverticulitis; 3 of these were later proved to be cancer, and 1 proved to be normal. Three were diagnosed as cancer and later proved to be diverticulitis; and 1 was diagnosed as normal and later proved to be diverticulitis. Morrison[24] believes, however, that well over 90 per cent of diverticulums can be seen. The differentiation of diverticulosis and diverticulitis cannot always be made at examination, but this seems to be largely due to the fact that patients are not studied by barium enema during the clinically inflammatory stage. In obstructive cases the differentiation of carcinoma and diverticulitis is often extremely difficult.[25-27] X-ray films show uncomplicated diverticulums as rounded outpocketings filled with barium in relief along the border of the bowel wall.

Diverticulitis is manifested by spasm, by hypermotility with varying degrees of obstruction due to fibroblastic reaction or by spasm. Tenderness may or may not be present.

Treatment

As with any disease, the best treatment is prophylaxis. Following a diagnosis of diverticulosis, measures should be instituted to avoid the factors known to predispose to diverticulitis, such as overdistention of the bowel, hard, coarse fecal material, degenerative changes and obesity. A low-roughage diet and sufficient mineral oil or other bland laxative to promote regular, soft-formed movements eliminate the usual mechanical factors. Tincture of belladonna to relieve spasm is always beneficial. All irritative cathartics are contraindicated, especially strong saline solutions since their prolonged use leads to hypertonicity of the rectal sphincter. All efforts should be aimed at cultivation of regular bowel habits.

With the onset of diverticulitis, further steps are indicated — a temporary soft diet to rest the inflamed sigmoid, bed rest, local heat and antispasmodics. There are several methods of applying heat locally — hot stupes to the abdomen, the Elliott method and warm colonic irrigations. Roberts[28] and Friedenwald[29] mention the use of large barium enemas in both subsiding and acute diverticulitis. One of us (E. L. Y.) has used repeated small instillations of dilute barium with excellent results. The method is as follows in acute cases: 30 gm. of x-ray barium in 90 cc. of warm water is instilled rectally twice a week, following a cleansing enema, until subsidence; then once a week as long as the forebearance of the patient lasts. Kimpton[30] uses barium by mouth with the same timing. The barium fills the diverticulum, shutting out irritating feces, and is itself mildly soothing.

As noted above, about 22 per cent of cases come to surgery, but indications for surgical intervention are still unsettled and the trend in therapy is toward conservatism. There seem to be five general indications for surgery: acute perforation with spreading peritonitis, sigmoidal obstruction, formation of a fistula, a localized abscess and inability to differentiate diverticulitis and cancer. Technical details covering the choice of the time to operate and the procedure to be adopted are too varied to warrant discussion here; the reader is referred to the excellent review by Laufman.[31] Graham[16] has emphasized the two cardinal principles: restoration of chemical balance while using the expectant measures of bed rest, local heat, sedatives and proper control of intake, and the simplest operative procedure. The importance of the latter principle is amply proved by figures collected by Laufman. In a series of 434 patients, there was an operative mortality of 11.8 per cent following conservative procedures, — colostomy alone, colostomy and subsequent closure, cecostomy, drainage of abscess, exploratory laparotomy, separation of adhesions, excision of inflamed diverticulums and repair of colovesical fistulas without resection, — as against a mortality of 21 per cent following radical procedures — resection after colostomy, Mikulicz resection, resection and anastomosis after colostomy, obstructive resection with subsequent closure of colostomy and one-stage resection.

Results. It is impossible to estimate the prophylactic value of measures undertaken when diverticulosis alone is present. Brown and Marcley[11] made a follow-up study of 192 patients with diverticulosis who had followed a careful medical regime. Of these, 145 had had no symptoms suggestive of diverticulitis, 46 had died of unrelated or unknown causes, and 1 had died of "questionably" related causes. They likewise reviewed 238 cases of diverticulitis treated on a medical regime. Of these patients, 118 (50 per cent) were "cured," 23 per cent were not affected, and 4 per cent died of related causes.

From a review of the literature, Laufman[31] has concluded that of any large series of cases 18 per cent receive no benefit from any form of therapy and the mortality is 16 per cent. The latter figure coincides with the latest one (14 per cent) reported by Lockhart-Mummery.[32]

* * *

The following sections and Table 1 are based on a series of 84 cases of diverticulitis of the sigmoid seen at the Faulkner Hospital from 1933 to 1942, inclusive. For analytical purposes the cases have been divided into chronic and acute, as determined principally by the presenting complaint, immediate history, physical examination and white-cell count, and partly by the known duration of the colonic disease.

TABLE 1. *Signs, Symptoms and Findings in Chronic and Acute Diverticulitis*

SIGN, SYMPTOM OR FINDING	CHRONIC DIVERTICULITIS %	ACUTE DIVERTICULITIS %
Change in bowel habits	79	46
Rectal bleeding	33	20
General digestive complaints	53	41
Pain	63	95
Tenderness	63	93
Elevated temperature	12	80
Elevated white-cell count	19	80
Positive sigmoidoscopic findings	71	—
X-ray diagnosis (barium enema):		
Diverticulosis	98	88
Diverticulitis	78	84

INCIDENCE

During 1941 and 1942, barium enemas were given to aid in the diagnosis of abdominal symptoms in 423 cases, and diverticulosis of the colon was demonstrated in 154 (36 per cent). In 89 (58 per cent) of these, diverticulitis was shown by x-ray examination. Both the percentage of diverticulums found and the number of these patients having diverticulitis are much higher than those found in the literature. The suggested explanation — namely, that this disease is much more frequent than is generally supposed—gives it a more prominent place than it usually receives.

CHRONIC DIVERTICULITIS

The distinction between mild, chronic diverticulitis and diverticulosis is often a debatable one. In the 43 patients with chronic diverticulitis have been included those with a clinical and x-ray diagnosis of diverticulitis and a history consistent with diverticulitis, together with x-ray evidence of a diverticulum, with or without attendant irritability and tenderness or spasm of the colon.

Age and sex. The ages ranged from thirty-seven to eighty-one years, with 88 per cent of the cases divided equally between the fifth, sixth and seventh decades. Twenty-four (56 per cent) of the patients were women.

History. A change in bowel habits was the outstanding complaint in 34 patients (79 per cent). There was constipation in 14 cases, diarrhea in 7 cases, and both in 6 cases. Gross bleeding was present in 9 cases, and occult blood in 5. Excluding 1 case of gross bleeding from carcinoma, the incidence of rectal bleeding due to diverticulitis was 33 per cent. Of the 9 patients without changes in bowel habits, 2 complained of indigestion, 2 of lower abdominal pain, 1 of pain in the left lower quadrant, 1 of pain in the right back, and 3 of general debility, loss of strength and anorexia. The patients with indigestion had associated diaphragmatic hernias, and one with low abdominal pain had ascites on a cirrhotic basis. One patient had relief of low abdominal pain from defecation.

The next most frequent complaints were abdominal pain (27 cases, or 63 per cent) and general digestive disturbances, such as gas, indigestion, nausea and vomiting (23 cases, or 53 per cent). There were other scattered symptoms such as loss of weight (5 cases), loss of strength and appetite (6 cases) and urgency and nocturia (2 cases).

Physical examination. Abnormal physical findings were minimal. Sixteen patients (37 per cent) had negative examinations (excluding other disease). Twenty-seven had abdominal tenderness, usually mild but occasionally marked and with spasm. This was below the umbilicus in 18 cases, in the left lower quadrant in 13, in the right lower quadrant in 3, throughout the lower abdomen in 2, in the left upper quadrant in 4, on the right side in 2, and diffuse in 1; the pain was not localized in 2 cases. A mass was made out rectally in 3 cases, in one of which it proved to be carcinoma, vaginally in 1, and in the left lower quadrant in 2. Distention was noted in 4 cases.

Temperature and white-cell count. These corresponded to the mildness of the symptoms and signs. Thirty-eight patients (88 per cent) had normal temperatures; in the remainder the temperature never went above 100°F. and rapidly fell to normal. The white-cell count was normal (below 10,000) in 35 cases (81 per cent) and below 13,500 in the remainder.

Sigmoidoscopy and barium enema. Sigmoidoscopy was done in 7 cases. No diverticulums were seen, but there was evidence suggestive of the diagnosis in 5 of these (71 per cent) — spasm of the lower sigmoid and rectum in 4 and a mass in 1.

Barium-enema studies were done in 41 cases and a roentgenologic diagnosis of diverticulitis of the colon was made in 32 (78 per cent). Diverticulums were seen in another 8 cases (20 per cent). Diverticulums were seen in the descending colon in 19 cases, in the transverse colon in 13 and in the ascending colon in 8. There were four partially correct or totally erroneous diagnoses. Two cases diagnosed as carcinoma of the sigmoid proved at operation to be diverticulitis; 1, diagnosed as diverticulitis, proved at autopsy to be diverticulitis and carcinoma of the rectum; 1, diagnosed as diverticulitis, proved at autopsy to be diverticulitis and carcinoma of the

rectum; 1, diagnosed as obstruction of the lower sigmoid was operated on for carcinoma and proved to be diverticulitis; and 1, diagnosed as abscess cavity, proved at operation to be due to diverticulitis. Thus, x-ray studies with a barium enema in the chronic group may be said to be 98 per cent correct in determining the presence of diverticulums of the colon. The actual diagnosis of diverticulitis is, in the mild cases at least, of little significance for two reasons: the enema may be given after subsidence of the acute stage, and the clinical picture as seen by the physician during the acute stage supported by x-ray evidence of a diverticulum should be sufficient for a diagnosis.

Treatment. Seven operations were performed (excluding a case with known diverticulitis of the sigmoid but with a carcinoma of the rectum in addition), making an operative incidence of 16 per cent. Two patients were explored because of inability to make a differential diagnosis between diverticulitis and carcinoma, and one of these had resection preceded by transverse colostomy. Three were operated on with a diagnosis of carcinoma of the sigmoid with resection in one, a two-stage Mikulicz resection in another, and drainage of an abscess in the third. One patient was operated on for lysis of adhesions diagnosed preoperatively as diverticulitis, 1 for evacuation of an abscess obstructing a previous suture line (from resection for carcinoma of the splenic flexure) that proved to be due to a ruptured diverticulum. One patient died of massive pulmonary collapse, a mortality of 14 per cent.

The procedures used for the 4 erroneously diagnosed cases were colostomy followed by resection, a two-stage Mikulicz resection and drainage of abscess (two cases).

The hospital stay averaged eight days for the nonoperative cases and twenty-seven days for the operative ones — excluding the case of resection of the splenic flexure.

Acute Diverticulitis

In the 41 cases of acute diverticulitis, as compared with the chronic cases, there was intensification of symptoms and signs, more operations were done, and the mortality was higher.

Age and sex. The age distribution was a decade younger than in the previous groups, 85 per cent of the cases occurring between forty and sixty-nine. There was a slight preponderance of males (51 per cent).

History. Pain was the chief complaint in 39 cases (95 per cent), in 24 of which it was below the umbilicus. It was in the left lower quadrant in 16 cases and hypogastric in 8, in 3 of which it was most marked in the right lower quadrant. There were several striking examples of the fallibility of localization of pain as indicating the site of disease. One patient had midepigastric pain, 1 in the right upper quadrant, 1 in the left testicle and 1 in the vagina.

Only 19 patients (40 per cent) had a change in bowel habits, and 16 of these stated that the change was directly associated with the present entry. There was obstipation of one to several days' duration in 6 cases, an urge to defecate without results in 3, and relief of pain on defecation in 3. Gross bleeding was present in 4 cases, and occult blood in 4, making an incidence of bleeding of 20 per cent.

There were digestive complaints in only 17 cases (41 per cent), with vomiting in 11, nausea with or without vomiting in 8 and anorexia in 3.

Urinary symptoms became more prominent in this group, occurring in 8 cases (20 per cent). Four of these patients had burning or sharp pain on urination; 1 patient had urgency and frequency. Other symptoms were pressure and pain around the bladder and vagina.

Physical examination. Thirty-eight patients (93 per cent) had abdominal or pelvic tenderness, in 31 below the umbilicus; the tenderness was greatest in the left lower quadrant in 21 and in the right lower quadrant in 6. One had tenderness in the right upper quadrant, and 5 on rectal or vaginal examination. Distention was present in 18 (44 per cent). A mass was felt in 16 cases (39 per cent) — in the left lower quadrant on abdominal examination in 10, and on rectal or vaginal examination only in 6.

Temperature and white-cell count. The temperature was elevated in 33 cases (80 per cent), rising to 100°F. or less in 14, to 101°F. in 11, and to 102°F. in 4. In 1 case it reached 103.8°F. The white-cell count was likewise elevated in 33 cases, reaching 12,000 in 7, 15,000 in 10, 20,000 in 10, 30,000 in 3, and 33,000 in 1.

Barium enema. No sigmoidoscopic examinations were done. A barium enema examination was done in 25 cases (61 per cent). In 21 of these, the diagnosis was diverticulitis and 1 diverticulosis in a spastic sigmoid; in the other 3 it was spastic bowel, complete obstruction at the junction of the descending colon and sigmoid and an obstructive lesion at the midsigmoid, respectively. The last case was diagnosed as diverticulitis by barium enema four days later, the first two at operation. Obstruction was present in 5 cases — complete in 3 and partial in 2. Barium was seen outside the bowel in 2 cases, and in both there was complete recovery without operation then or later.

Treatment. Proctoscopy was done in 1 case and a mass pressing on the lumen of the lower bowel was noted. Surgical procedures were carried out on 21 patients (51 per cent), with errors in diagnosis in 6 cases and a mortality of 19 per cent. The erroneous diagnoses were acute appendicitis, twisted ovarian cyst (3 cases), ectopic pregnancy and carcinoma of the sigmoid. The last case was operated on primarily for fibroids. A mass in the sigmoid was found and was believed to be carcinoma. Colostomy was done, and at a second operation resection was performed; no carcinoma was found. Simple drain-

age was carried out in 9 cases, colostomy in 2, a one-stage resection in 1, and a Mikulicz resection in 2. Three patients died within ten days of operation, of embolus; 1 died seven years later as a result of a chronic draining pelvic abscess.

Summary and Conclusions

A brief review of the literature on diverticulitis of the colon is given, and the symptoms, signs and treatment of 84 cases at the Faulkner Hospital are presented.

Certain facts stand out as important: blood in the stool was found in 26 per cent of the cases where no cause other than the diverticulitis was found; the incidence of this condition was much higher in this series than in others, which suggests that in a true cross section of disease as seen by the general practitioner the condition should be oftener recognized and treated; conservative treatment, especially the use of x-ray barium either by mouth or where possible by rectum, gives a high percentage of relief; and when surgery is needed the simplest procedure possible gives the lowest mortality.

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TRANSIENT NERVOUS HYPERTENSION AS A MILITARY RISK*

Its Relation to Essential Hypertension

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A COMMON problem is that of male adults between the ages of twenty-one and forty-five, usually in the twenties, well qualified personally and physically for service in the armed forces except for transient elevations of the blood pressure. The systolic pressure varies from 140 to 160 mm., and occasionally higher, and the diastolic pressure ranges from 95 to 110, and rarely as high as 120. About one third of the subjects have only systolic hypertension. Occasionally nervous hypertension has previously been noted by the family physician or an insurance examiner or at a routine school or college examination. As a rule this hypertension was transient. Frequently the subject is activated and energetic, perspires freely, and has a slight to moderate tachycardia and a slight tremor. He resembles slightly a patient with hyperthyroidism. He is anxious to serve and is afraid his blood pressure will keep him out. In the more marked cases, the applicant is positively conditioned to the determination of his blood pressure. The presence of the examiner or even the sight of the sphygmomanometer causes a feeling of tenseness, sweating, tachycardia, sometimes hyperpnea, erection of the hairs and also a rise in blood pressure. In short, one observes a total sympathetic adrenergic response. With rest and reassurance the blood pressure descends, and one obtains readings within normal limits early and late in the day for three successive days.

During one month at the Office of Naval Officer Procurement, Boston, 222 (14 per cent) of 1574 applicants had mild variable hypertension at the initial examination. This is the expected incidence. One of us (R. S. P.[1]) found early variable hypertension in 10 per cent of 3598 college men. Two other unpublished observations on smaller series showed 11 per cent in a mixed group of normally employed white-collar workers aged twenty to seventy, and 12 per cent among male graduate students.

Applicants with nervous hypertension are men aged from eighteen to fifty, the majority being in their twenties or thirties. Organic changes as judged by the history, physical examination and urine examination are absent. The blood pressure itself is transiently elevated rather than transiently normal, as in early, true essential hypertension. Slightly over half the subjects have a family history of degenerative vascular disease in one or at the most two parents, grandparents or siblings. A random sampling of 26 applicants with nervous hypertension showed that 14 had both systolic and diastolic hypertension, 10 had a systolic hypertension only, and 2 had diastolic hypertension only. In 12 of the cases with systolic and diastolic hypertension the blood pressure fell, with an average drop of 19 systolic, 14 diastolic, to normal on the second or third day, and in 7 of the 10 with systolic hypertension it fell, with an average drop of 14, to normal. In 1 of the 2 cases with diastolic hypertension the blood pressure returned to normal. Its response to exercise and to change of position was not significantly different from that of normal controls.

Of cold tests[2] on 27 of this group, in 6 there was a fall of either systolic or diastolic pressure or both. In the others the average rise in diastolic pressure was 12, only 4 men showing a rise of 20 or more. A control series of tests on 18 miscellaneous hospitalized patients without cardiovascular disease showed an average systolic rise of 11, with a fall of 5 in one, and an average diastolic rise of 15. Only 3 showed a systolic rise of 20 mm. or more, and only 4 a diastolic rise of the same degree. On the other hand, cold tests on 30 patients with definite though mild, benign essential hypertension with minimal organic changes all showed definite pressor responses, the average systolic rise being 26, and the pressure response was 20 or more in 20 patients. The average diastolic rise was 18. It is evident that definite essential hypertension, although mild, is associated with greater and more persistent pressor responses to cold than is nervous hypertension in a random sampling of applicants. However, a rise of the blood pressure above accepted limits, even when transient, at the very least indicates that the subject has a greater chance of showing hypertension at later physical examinations.[1, 3, 4] Hyper-reactors to mental stress incident to military physical examinations, like hyper-reactors to the cold test,[2] may be considered to be potentially hypertensive. Statistical studies suggest that even when blood pressures are within generally accepted normal limits, persons with pressures at the lower limits of normal are less likely to develop subsequent hypertension than are those with pressures at the upper

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limits of normal.[5] As many clinicians have long recognized, the lower the blood pressure the better the life expectancy. There is no doubt that simple hypotension is associated with longevity and freedom from degenerative vascular disease. The probability of living to an advanced age, on the other hand, is not necessarily a desirable characteristic in a military risk if there is a reasonable probability of living to middle life in good functional condition and provided military service is entered in young adulthood.

If the applicants with nervous rises in blood pressure are at the worst potential hypertensive patients, it may be assumed that the morbidity and mortality of patients with benign essential hypertension of different degrees of severity and on the average ten to twenty years older than the applicants will give some intimation of the latters' future as the factors of age and presumed duration of hypertension are added.

We have reviewed 1171 cases of essential hypertension, all seen and followed personally for different intervals during the last ten to fifteen years. Four hundred and twenty-five cases have been excluded because of sympathectomy, incompleteness of data or insufficient follow-up. Two hundred and eleven of the remaining 646 patients in hospital and private practice are believed to have mild benign essential hypertension because of continued though variable hypertension with minimal organic changes. The majority fall within the fifth decade. Seventy-five per cent have a family history of degenerative vascular disease. Minimal organic changes in one or more of the three vital areas are as follows: the head, 51 per cent (narrowing of fundal arterioles); the heart, 30 per cent (slight enlargement or prominence in the region of the left ventricle by x-ray but no measurable enlargement on physical examination); and the kidneys, 18 per cent (slight changes in urine examinations or in function tests). The known duration of hypertension is as follows: one to two years, 27 per cent; three to five years, 31 per cent; six to nine years, 33 per cent; 10 to 19 years, 6 per cent; and twenty years and over, 3 per cent. Of 100 of these patients followed variously from one to ten or more years, 6 have died, only 1 under the age of fifty — a man of thirty-five who died after multiple nephrostomies for stone and infection. Of 3 patients in the fifties, 1 died of intercurrent infection (otitis media and streptoccocal meningitis), 1 of bleeding duodenal ulcer, latent coronary disease contributing to his demise, and 1 in an alcoholic debauch with a presumed cerebral accident. The other 2 patients were over seventy, and the factor of age was at least as important as the relatively mild hypertension. This group represents potential developing into continued though mild essential hypertension.

The situation of patients with late benign hypertension at any given point allows a fair guess concerning the ultimate progress of a certain proportion of applicants with nervous hypertension if they are considered to be potentially hypertensive. Of the 646 patients with essential hypertension, 237 are believed to have late essential hypertension because of marked organic changes in one or more of the three vital areas, as follows: the head (exudate or hemorrhages in the eye grounds, 37 per cent, and cerebral accidents, 20 per cent); the heart (marked enlargement, 22 per cent, and anginal failure, 22 per cent, and actual or impending congestive failure 20 per cent); or the kidney (evident chronic vascular nephritis, with or without impaired function, 59 per cent). The majority of this group are in the sixth decade. Three fourths of these patients have a family history of degenerative vascular disease. The known duration of hypertension is as follows: one to two years, 25 per cent; three to five years, 25 per cent; six to nine years, 19 per cent; ten to fourteen years, 15 per cent; fifteen to nineteen years, 9 per cent; and twenty years and over, 7 per cent. Of 111 patients followed to date, 40 (36 per cent) are dead; of these, 28 per cent died of cerebral accidents, 18 per cent of coronary disease, 8 per cent of congestive heart failure, and 10 per cent of uremia. In 3 per cent, death was related to peripheral vascular disease, and bronchopneumonia accounted for 2 per cent. In 30 per cent, the cause is not known. The most important fact is that 74 per cent of the patients died at over fifty years of age.

The composite view given by the morbidity and mortality of these two groups — 211 patients with early or mild and 237 with late essential hypertension — indicates a favorable outlook for essential hypertension in general and for nervous hypertension in particular up to the age of fifty. However, a prolonged follow-up of patients with nervous hypertension in all respects similar in character and degree to the condition seen in applicants for military service is desirable.

Twenty-five private patients, all men, originally showing transient nervous hypertension or potential hypertension or thought to have early essential hypertension that regressed have been followed long enough to give some indication of the prognosis. Hypertension was first noted in late boyhood in 1 case, in the others during the third decade. On 12 of the latter there are no recent data on the blood pressure, but it is known that the patients are alive and carrying on their normal lives — 8 for seven to ten years and 4 for eleven to fifteen years after the original observation. The blood-pressure levels of 13 patients with transient nervous hypertension are known for three to twenty-five years after the first observation. Of 3 followed for three to six years, all have essentially normal blood pressures, although in 2 the pressure is still variable but ranges within the upper limits of normal. The third, with an original transient systolic pressure of 200, has developed advanced pulmonary tuber-

culosis, which may explain the regression. Four patients have been followed for six to twelve years. Two have been accepted as normal by the Army eight years after the original observation, which showed systolic pressures of 155 to 165. Another, ten years since the first observation, has been able to obtain large insurance policies, although the systolic pressure occasionally rises to 150, the diastolic remaining at about 90. Another has continued to show transient slight rises in blood pressure, and has had an attack suggesting a small posterior coronary thrombosis, from which he has fully recovered, now enjoying vigorous exercise. Five patients with twelve to fifteen years' follow-up observations have blood pressures within normal limits. In at least 3 of them the pressure has entirely regressed to well within normal limits. The thirteenth patient in this group was found to have an elevated blood pressure on enlistment in the last war, although the exact character of the pressure at that time is not known. At the present time (twenty-five years later), at the age of forty-eight, he has a well-established hypertension of moderate degree but is free from symptoms except for nervous tension. He has excellent renal function and slight to moderate organic changes. Thus, of 25 patients with known hypertension as young adults, 7 have been followed for three to twelve years, 12 for seven to fifteen years, 5 for twelve to fifteen years, and 1 for twenty-five years. The last has established hypertension but is symptomatically fairly well at the age of forty-eight without heart or renal failure. One may have had a small posterior coronary infarct, from which he has fully recovered. All the others with the exception of one with pulmonary tuberculosis and one with a psychosis are known to be in good health. Approximately half of them have known normal blood pressures.

A review of 211 patients diagnosed as having mild essential hypertension and of 237 patients diagnosed as having late essential hypertension shows that the majority fall within the fifth and sixth decades, respectively. These groups give some intimation of the condition ten to twenty years later if transient nervous hypertension may be called potential essential hypertension. Organic changes are minimal in the patients with mild but definite essential hypertension. The mortality at a given moment of follow-up is 6 per cent, almost always at fifty years or over. Organic changes in the patients with late hypertension are severe, but are confined to the group on the average twenty years older than the applicants with nervous or potential hypertension or both. The mortality at a given moment of follow-up is high, 36 per cent, but 75 per cent of the patients died after the age of fifty. The duration of known hypertension in each group with essential hypertension is similar, being one to six years, in 50 per cent and six to over twenty years in 50 per cent. Except for precocious arteriolar disease and malignant hypertension, which are apparent from the routine histories, physical examinations and urine tests, benign essential hypertension is characterized by an excellent prognosis until middle life, when the morbidity and mortality rise sharply. The military applicant under forty with nervous or potential hypertension or both thus appears to be a good risk for military service.

Finally, a prolonged follow-up of 25 male patients with nervous hypertension reveals an excellent prognosis. One patient has possible evidence of vascular vulnerability (a questionable posterior coronary infarction) and another, after twenty-five years, has definite essential hypertension of moderate degree.

Comment

The incidence of nervous hypertension is 10 to 15 per cent of male applicants for a naval commission, about as would be expected from civilian practice. A family history of vascular disease is found in about half the applicants with nervous hypertension but is definitely more frequent (75 per cent) in patients with essential hypertension. The vascular responses of patients with nervous hypertension are normal except for the blood pressure and except for occasional cases of an abnormally high response to cold. The pressor response to cold is far more uniformly present and is of greater degree in patients with established essential hypertension, even when of mild degree, than in persons with nervous hypertension.

Suggested criteria by which applicants with variable hypertension at examination for military service may be accepted, even though above the accepted limits of normal, are as follows: a family history indicating no death from degenerative vascular disease under the age of sixty in parents, grandparents, uncles, aunts or siblings; normal height and weight according to standards; age of forty years or less; absence of marked tachycardia or other adrenergic responses indicating nervous instability, in itself disqualifying; normal fundi, size of heart and urine examination; a certified report of normal or near normal blood pressure by the local physician, indicating the transient character of the hypertension associated with the examination for military service; and a response to the cold test of less than 20 systolic and less than 15 diastolic.

Conclusions

Transient nervous hypertension found at physical examination for naval service is evidence of a nervous pressor reaction and is often accompanied by one or more adrenergic manifestations, such as tachycardia, sweating, erection of hairs and disturbed rhythm.

Persons with transient nervous hypertension have a somewhat more marked rise of the blood pressure in response to cold than do normal controls, but

definitely less than do patients with definite but mild early hypertension. The blood-pressure responses to exercise and to change in posture are not significant.

The familial predisposition to degenerative vascular disease, as indicated by the family histories of a fair sample of those with transient nervous hypertension, taken as a whole, appears less than in patients with definite essential hypertension.

The prognosis of nervous hypertension as indicated by a long follow-up study of 25 cases, regarding both mortality and morbidity before middle age, is excellent.

Reference to age, duration of known hypertension, morbidity and mortality at a given moment in the follow-up of two groups of patients, 211 with mild or early essential hypertension and 237 with marked or late hypertension, suggests that transient nervous hypertension, taken as the first sign of essential hypertension, need not be disqualifying for military service.

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THE HEALTH OFFICER AND THE VETERINARIAN*

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THE exigencies of the present war have added many burdens to public-health officials in this country. The fact of limited personnel in the various health departments makes particularly desirable the use of any group that is capable of materially contributing to the solution of problems faced by health officers. A relatively untapped reservoir of aid exists in the veterinary profession.

It is hardly necessary to introduce the veterinarian to any informed participant in public-health problems. In the press of everyday affairs, however, the health officer often overlooks many opportunities for enlisting the aid of the veterinarian. The interests of the two overlap in many phases of public-health activity. It is believed that closer co-operation between them will result in mutual benefit, and thereby in increased service to the community.

The following discussion is limited to certain problems in which the interests of the health officer and veterinarian dovetail. The suggestions concerning courses of action are made with the realization that many of them have been adopted by various health departments throughout the country, but there is much room for improvement. It is hoped that if special local problems preclude the use of some of these suggestions, the health officer will formulate practicable alternatives.

Tuberculosis

Thanks to the unparalleled campaign for the eradication of bovine tuberculosis conducted by the United States Bureau of Animal Industry, its prevalence has dropped from approximately 5 per cent in 1917 to less than 0.3 per cent in 1942. It is interesting to note the adaptation of the methods used in this campaign to the problem of human tuberculosis.[1]

A glance at the problem of bovine tuberculosis in England today will reveal how fortunate the United States is in this respect. One of the difficulties faced by health officers in combating tuberculosis in England is the perturbing rise in the incidence of the bovine-bacillus infection in human beings.[2] The high prevalence of tuberculosis infection in cattle, coupled with the widespread practice of drinking raw milk, especially in the rural areas to which many city children have been moved, readily explains the reasons for the problem. In this country today, human infection with the bovine tuberculosis organism has become rare because of the reduction of tuberculosis in cattle and the increased practice of pasteurization of milk. Complacency should, however, be guarded against for several reasons.

In many states the tuberculin retesting of accredited areas need not be applied for three to six years. Conceivably, during this time small nuclei of infected animals that still exist can create havoc among the new generations of highly susceptible animals. Adequate livestock sanitary laws are in existence for interstate shipment of animals for purposes other than immediate slaughter, but intrastate shipments are not nearly so well regulated, so that it is possible for infected cattle to be widely dispersed. It is true that the danger to human beings may be obviated by the adequate pasteurization of all milk. The country is still an appreciable distance from this goal, however, particularly in rural areas comprising small towns and farms.

The health officer is presented with several avenues of attack, all of which should be used if

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feasible. With the possible exception of certified herds, the health officer should use every influence to compel the pasteurization of all milk sold for consumption in his locality. Educational printed matter should be distributed to farmers to ensure protection from their own livestock. An annual tuberculin test should be required of all herds supplying milk to the area for which the health officer is responsible. These tests may be carried out by a state or federal accredited veterinarian of the farmer's choice. Most state bureaus of animal industry, having limited personnel, will gladly co-operate with such a project because of the safeguard afforded by the early detection of infected animals.

Brucellosis

A recently reported milk-borne epidemic of brucellosis[3] serves to illustrate some fertile ground where determined plowing by a combination of the veterinarian and health officer may be expected to yield a better harvest than has heretofore resulted.

In the United States almost the entire concern is with *Brucella abortus* and *Br. suis* infections. Besides milk-borne infection, the transmission of brucellosis by direct contact with diseased animals or contaminated meat, as experienced by farmers, veterinarians, slaughterhouse workers and so forth, adds to the problem of the health officer. Concerning infection with *Br. suis*, which is more pathogenic than *Br. abortus* in human beings, it has been stated that the incidence of recognized brucellosis in man is directly proportional to the development of the hog-raising industry.[4] The adequate pasteurization of all milk would lessen the worries of the health authorities dealing with brucellosis. The health officer would be afforded relief from most of his difficulties, but the underlying cause, infected animals, would remain to plague the livestock officials as well as to contribute additional contact cases in human beings. Because of the latter, and the continued consumption of raw milk, the health officer should be directly concerned with efforts to control brucellosis in animals.

In 1934, the United States Bureau of Animal Industry, in co-operation with livestock sanitary officials of the various states, inaugurated a vigorous attack on bovine brucellosis, which had been causing severe economic losses to farmers. Details of the campaign, which is still in progress, may be obtained elsewhere.[5] Briefly, the method used consists of a combination of blood tests and slaughter of infected cattle, vaccination in calfhood with an attenuated strain of the Brucella organism, and sanitary control or herd management. The problem of brucellosis in swine has been relegated to the background because of limited facilities.

The health officer can help in reducing the sources of Brucella infections for human beings other than from unpasteurized milk by encouraging farmers who supply milk to the health officer's locality to co-operate with the state and federal livestock authorities in their brucellosis-eradication campaign, and by urging the dairy farmer who also keeps swine to consult with the local veterinarian concerning the detection and eradication of porcine brucellosis in his herd.

Other Milk-Borne Infections

From a health officer-veterinarian standpoint, the most important questions relative to milk-borne infections involve the transmission of hemolytic streptococcus infections and the production of clean milk. An appraisal and solution of the latter problem will, in most cases, include the former.

Anderson[6] in a stimulating article focuses a much needed spotlight on archaic milk-sanitation practices, among other things, that are at present being indulged in throughout the country. There can be little doubt that much of the emphasis placed on the barn phase of the production of milk should be shifted to the pasteurizing phase under the various milk codes extant. It should not be forgotten, however, that most farmers if left entirely unsupervised are quite lax in their sanitary practices. This results in a deterioration of the quality and quantity of milk production, which can ill be afforded at the present time.

Many large milk distributors have found that the employment of veterinarians for dairy inspections has resulted in excellent relations with the farmers as well as a greater and cleaner milk supply. It is suggested that more health departments adopt this procedure for the following reasons. In the first place, the veterinarian is the best qualified person to detect a diseased udder. Many udders infected with hemolytic streptococci pathogenic for human beings may thus be recognized early. It is well to interpolate here a factor that is of vital importance to the nation at the present time when it is necessary to exploit fully every food source. Infectious mastitis causes a greater loss in milk production than all other bovine diseases combined. The essence of the battle against this insidious destroyer of the udder lies in its early detection. The newer chemotherapeutic measures for mastitis, if instituted early, have been found highly efficient in aborting the attack. The veterinarian on discovery of any evidence of mastitis in his routine examination can inform the farmer of the latent danger, thereby striking an effective blow for an increased milk supply. In the second place, the veterinarian is fully competent to make any required sanitary surveys of the farm. Lastly, the expense incurred by health departments for dairy inspections need be only nominal if local veterinarians are employed for part-time work. This would be similar to the employment of local veterinarians on a per-diem basis by the federal and state bureaus of animal industry for the control of tuberculosis and brucellosis.

Equine Encephalitis

Many of the epizootiologic and epidemiologic characteristics of equine encephalitis have been clarified by the great amount of research accomplished in this disease in the last ten years. It is still uncertain, however, whether horses, wild and domestic fowls or other animals serve as the principal reservoir for human infection. It is quite possible that the horse is merely a chance victim, like the human being, and plays little part as a reservoir of the virus. Circumstantial support of this view is given when one considers the fact that in the last few years the incidence of equine encephalitis in horses has dropped considerably, whereas, largely because of better diagnostic facilities and reporting, recognized cases in human beings have increased.[7] It is difficult to conjecture a comparison of equine and human infection prior to the use of adequate diagnostic methods.

The declining incidence of the disease in horses within the last few years has been developing a false sense of security in the minds of many horse owners. The reasons for this decline are difficult to evaluate when one considers the recent widespread use of equine vaccination, as well as possible biologic variables, such as decreased pathogenicity of the virus and fewer reservoirs or vectors. A somewhat analogous situation exists in human beings with such diseases as smallpox, diphtheria, measles and scarlet fever.

It is sound preventive medicine to reduce to a minimum, whenever feasible, the probable reservoirs of infection. In view of the still incomplete knowledge concerning the inter-relation of equine and human infection, it would be unwise to relax the effective preventive measure, intradermal chick-embryo vaccine, as applied to horses. An unvaccinated, highly susceptible horse population may well cause serious consequences in human beings. An official recommendation by the health officer to recalcitrant horse owners in his district to have horses vaccinated properly by a veterinarian would, therefore, be well within the province of his duty to the community.

Rabies

Few diseases can cause such public clamor for action as can an outbreak of rabies. Regulations concerning rabies control, too often unenforced, differ widely in various communities. A workable plan that will satisfy the public demand as well as the requirements of prevention is highly desirable.

Webster[8] states in his excellent book on rabies, "His [the veterinarian's] skill and efforts in recognizing early rabies constitute a potent first line of attack in the control program." The advantages of facilities for the isolation and clinical observation of suspected rabid dogs, afforded by the veterinarian to the health officer, can be well appreciated. Furthermore, in another highly important phase of the rabies-control program—the vaccination of dogs, the veterinarian and health officer can work together.

Until last year, the efficacy of prophylactic rabies inoculations in dogs with biologic products then on the market was rightly questioned. The latest statistically significant experiments of Leach and Johnson,[9, 10] however, speak well for the effectiveness of a practical single-inoculation procedure. The work of Webster and Casals[11] shows great promise of yielding an even more effective marketable vaccine. Health officers, therefore, who were formerly hesitant about advising annual vaccination can now recommend a vaccine of proved potency as part of their control program.

Many progressive health departments advocate the annual vaccination of dogs on a voluntary basis. Veterinarians are employed for a few days each year, and the cost to the dog owner is nothing, or merely that of the vaccine. Unless the project is well advertised, the co-operation on the part of the owner is usually fairly poor. For a really effective preventive program the following procedures should be enforced: elimination of stray dogs, proper restraint of dogs when outside the house, licensing of all dogs and compulsory annual vaccination. The first has become more difficult to practice because of the lack of personnel. The second is hard to enforce except in rabies scares. A combination of the last two can do much to offset the lack of the first two because of the immunization of dogs most intimately associated with people. It is suggested that, when the dog's license is renewed yearly, a statement be required from the owner's veterinarian certifying that the dog has been recently vaccinated with an approved product. If the owner so wishes, the vaccination can be performed on appointed days by a veterinarian employed by the health department.

Other Diseases

There are several other diseases and conditions encountered by veterinarians concerning the incidence of which the health officer should be apprised.

Leptospirosis. Fortunately the disease in dogs that is being increasingly encountered and recognized by veterinarians is mainly due to *Leptospira canicola*, which is much less communicable to human beings than is *L. icterohaemorrhagiae.*

Ornithosis. The discovery of this virus in barnyard fowl[12] may indicate another source of trouble for the health officer. At present, the diagnosis of ornithosis by the local veterinarian with the means at his disposal is difficult. Possibly future investigations will overcome this obstacle.

Listerellosis. The natural mode of transmission of this disease, which sporadically attacks cattle, sheep, goats, chickens and human beings, is still unknown.

Tick infestation of dogs. As is well known, the wood tick and American dog tick commonly in-

festing dogs in this country are carriers of the rickettsial organism that causes Rocky Mountain spotted fever. The questioning dog owner may be referred to the veterinarian to help solve the problem of deticking his dog.

Food Sanitation. A recommendation by health officers for the inclusion of veterinarians on local boards of health should prove advantageous. The veterinarian's knowledge of food sanitation — as evidenced by the work of the Veterinary Corps of the United States Army — and disease control would be valuable in the effective performance of a board's duties.

Summary

Various ways in which the veterinarian can be of assistance to the health officer are discussed, and increased utilization of the former by the latter is recommended.

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Erratum. In the paper "The Grave Infections of the Hand" by Major Flynn, which appeared in the December 9 issue of the *Journal*, the abbreviation "gr." should be changed to "gm." in two places: page 899, column 1, the third and fourth lines from the bottom.

MEDICAL PROGRESS

TUBERCULOSIS

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TUBERCULOSIS is a disease of many different phases and, unless arbitrary boundaries are established in advance, discussion of the subject could continue endlessly. This year, even more than in the past, emphasis falls on the war and its relation to tuberculosis. Commenting with some skepticism on the predicted decline in tuberculosis mortality, King,[1] nine months before Pearl Harbor, pointed out that "war may upset all calculations." Fortunately, the death rate from tuberculosis in the United States has continued to fall,[2, 3] but wartime experience in other countries[2, 4, 5] compels one to temper optimism with caution.

Tuberculosis and the War

The impact of the war on tuberculosis can be resolved into two main components. The first — case finding on an astounding and unprecedented scale — tends to lower mortality. The second — depletion of personnel in sanatoriums[6] — results in a reduction of the number of beds available for treatment and thus acts in the opposite direction. The resultant of these components depends on their magnitude and direction. But only the crudest estimates of these forces are as yet available.

Tuberculosis in the armed services. At present a satisfactory chest x-ray examination is required of all men and women accepted for service with the armed forces.[7] During the early period of mobilization only three of the nine corps areas x-rayed all the men inducted. Because x-ray photographs were not taken of everyone, it is estimated that between 5000 and 15,000 persons with tuberculosis were taken into the Army during the fall and winter of 1940. This situation rapidly improved, however, and by March, 1941, 51 per cent of all the men called to induction centers received x-ray examinations. Three months later the Adjutant General ordered the inclusion of chest x-ray films of all registrants appearing before induction boards. On January 22, 1942, the order was further modified so that an x-ray examination became a requisite for all applicants for voluntary enlistment as well as for inductees.

As a result of official recognition of the value of the x-ray, tuberculosis case finding has proceeded at a pace hardly believed possible. Many reports of tuberculosis surveys among inductees are now

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available. Rowntree and his associates[8] found 114 cases of tuberculosis in a group of 19,923 Selective Service registrants between the ages of twenty-one and thirty-six — an incidence of 5.7 per 1000 examined. In a second analysis of 45,585 registrants, aged eighteen to nineteen years, 6.8 cases per 1000 examined were rejected because of tuberculosis.[9] For Negroes, eighteen and nineteen years old, tuberculosis was tenth as a cause for rejection, the rate being 9.7 per 1000; it was lower in rank for Whites, accounting for the rejection of 6.6 per 1000 registrants. For the age group of twenty years and older tuberculosis was ninth in rank for both Whites and Negroes.

Statistics from the Navy have also been reported.[10] Of a total of 247,253 x-ray films taken at seven Navy training stations and Marine bases, 273 (1.2 per 1000) showed active tuberculosis whereas 786 (3.2 per 1000) were regarded as inactive. Of course, these figures do not reflect the true incidence of tuberculosis, since additional cases, discovered by history and examination, were eliminated at local recruiting centers.

Since Canada has been at war longer than the United States, the experience of the Canadian Army should be of interest. The 14-by-17-inch celluloid film has been adopted by them because of its availability and on the theory that "the cheapest method is the one that is most accurate."[11] In one survey of 400,000 men, examined from September, 1939, to March, 1942, 3969, or 1 per cent, were rejected because of tuberculosis.[12] During this same period 114 men developed the disease. Ten of these men had entered the army in the early days before chest x-ray films were required. Of the 104 remaining, 96 had negative induction x-ray films, but 8 had been admitted to the Army, although their initial x-ray films showed small lesions. In another analysis of 328,325 examinations, it was demonstrated that the error in reading films amounted to only 0.003 per cent, since 11 cases of tuberculosis developed in soldiers whose initial x-ray films actually showed lesions but had been interpreted as negative.[11] An additional 16 men (0.004 per cent) whose induction x-ray films showed no disease subsequently developed tuberculosis while in the service.

Recognizing that tuberculosis presented a serious threat to the health of the nation, the United States Public Health Service inaugurated its own program shortly after war was declared.[13, 14] An Office of Tuberculosis Control was established with the following functions and objectives: chest x-ray examination for workers in war industries; chest examination and health education of families in war-industry communities, especially in the underprivileged; chest x-ray examination of Coast Guard recruits; immediate reporting to state and city health departments of men rejected with tuberculosis; and tuberculosis consultation service to state health departments on request.

Two auxiliary projects, of minor importance now but of presumably greater importance in the future, have also been initiated. The first is a routine chest x-ray examination for all admissions to large general hospitals. The second is chest x-ray examination for inmates and employees of state institutions, especially those for mental disease.

To implement this ambitious program, ten portable x-ray units were obtained and set up in trailer automobiles. Each complete unit costs about $6200 and is staffed with three workers — a physician, a technician and a clerk. Under usual working conditions between three hundred and five hundred photofluorograms (35 mm.) can be taken daily, and the present rate of work for each mobile unit is about two thousand x-ray examinations a week. In co-operation with industry, 250,000 workers were x-rayed in 1942. It is estimated that 1,000,000 examinations will be made in 1943 at a unit cost of 15 cents per examination. Plans for enlarging the program of the Office of Tuberculosis Control did not materialize completely because of failure to obtain an expanded appropriation.

Tuberculosis in industry. Industry has become more cognizant of the role that it can play in eliminating tuberculosis.[15, 16] In industry it is a combination of several factors that tends to bring about an increase in tuberculosis. The strain of accelerated production under which new workers find themselves causes some breakdowns in those whose lesions are latent or unhealed. Besides, many persons who know they have tuberculosis take the risk to their health and enter industry because of high wages. A third factor is that in the search for employment many persons shift from low-rate tuberculosis areas to areas with high rates, and vice versa. Management has recognized the fact that under wartime stress tuberculosis is likely to increase, but it has been exceedingly difficult to induce labor to establish its own antituberculosis program.

Sawyer,[16] under whose direction the incidence of tuberculosis among employees of the Eastman Kodak Company has been reduced from 2.3 per cent in 1921 to 0.5 per cent in 1941, has presented an "ideal" plan for tuberculosis control: a chest roentgenogram of all present employees; a chest roentgenogram of all applicants for employment; and periodic follow-up roentgenograms of all employees.

Miniature versus regular films. The superiority of x-ray examination over other methods of case finding is admitted by all, but there is still considerable disagreement concerning what procedure is best suited to mass surveys. Excellent reviews of the problem have appeared.[17-22] As has been pointed out, the Canadian Army prefers the 14-by-17-inch celluloid film; the United States Army, the 4-by-5-inch or 4-by-10-inch stereo; the United States Navy and Public Health Service, the 35-mm. film. In New York City and elsewhere the 14-by-

17-inch paper film is used routinely. For diagnostic accuracy the 14-by-17-inch celluloid film ranks first, but there is some difference of opinion whether the 14-by-17-inch paper film outranks the 4-by-10-inch stereo. The 35-mm. film is regarded as being on a par with fluoroscopy,[19] but because of its size, it does have some advantages in mass survey work.

Statistical summary. As a result of the almost universal adoption of the chest x-ray examination in both the armed services and industry, it is expected that at least 25,000 new cases requiring hospitalization will have been discovered by the end of 1943.[22] Existing sanatorium facilities are pitifully inadequate to absorb the additional load of 25,000 new patients.[23, 24] Even the most recent statistics[7] fail to demonstrate the real gravity of the situation because the actual number of available beds in many institutions has been reduced by loss of personnel far below the figures given. Early in 1942 the number of beds for tuberculosis patients in this country totaled 97,726, or 1.62 per death, in 1940 (in 1938 the ratio was 1.41). Minimum standards for hospital facilities require 2 beds per annual death; recommended standards are set at 3. In 1942 only seven states and the District of Columbia met the recommended standards. To care for the burden of the newly discovered cases it is estimated that thirty-two states need from 100 to 6000 additional beds. Massachusetts has a theoretical surplus of 1279 beds above minimum standards to take care of an expected 700 new cases. As has already been indicated, this surplus probably exists only on paper. Many sanatoriums in this state have already been forced by wartime restrictions to reduce the actual number of beds.

Tuberculosis Control in Civilian Life

General hospitals. Recent articles call attention to the fact that the general hospital has not been fully utilized as a source of case finding. In one hospital, routine x-ray examination over a period of eighteen months demonstrated that 4 per cent of the patients had evidence of tuberculous infection and that in 0.6 per cent it was active or questionably active.[25]

Approaching the problem somewhat differently, Farber and Clark[26] analyzed the records of 100 patients consecutively admitted to a general hospital with diagnoses other than tuberculosis and who were later proved to have this disease. Sixty-eight had positive sputums and 3 others discharged tubercle bacilli from extrapulmonary foci. Because of delay or error in diagnosis these patients — a menace to the health of other patients and employees — remained in the hospital a total of 1497 days before transfer to the tuberculosis service. Since 95 of the 100 were pulmonary cases, the value of a routine chest x-ray examination in a general hospital is readily demonstrated.

Nurses and medical students. In view of the fact that unrecognized tuberculosis exists so commonly in hospitals where physicians and nurses receive their training, it is not surprising that it is so serious an occupational hazard for them. The literature pertaining to nurses for the years 1935-1940 has been reviewed by Whitney and Stofer.[27] Nurses who spend a portion of their training on a tuberculosis service have a higher infection rate (as measured by the conversion of the tuberculin test from negative to positive) and possibly a higher morbidity rate than those who do not.[28] For students of medicine the problem is equally serious.[29] Myers and his associates[30] compare a group of lawyers with a similar group of physicians and point out that over 7 per cent of the physicians reported having had tuberculosis, whereas less than 2 per cent of the lawyers developed the disease. They show further that since 1936, when a program to protect medical students was adopted, there resulted a gratifying reduction in the number of students infected. Todd[31] believes: "Annual checking of students and nurses, particularly nurses, is entirely inadequate to properly safeguard health. Tuberculin tests should be made every three or four months and all positive reactors routinely examined by x-ray at the same interval."

Colleges. Lyght[32] reports that for the academic year 1940-1941 three hundred and four colleges and universities had tuberculosis programs, an increase of two hundred in four years. There can be no question that in the absence of a definite case-finding program many cases are missed. Lees[33] points out that during 1941-1942 only 11 new cases of tuberculosis were discovered at one hundred and seventy-seven colleges that provided for no case finding (an incidence of 0.07 per 1000 students), in contrast to 744 new cases in three hundred and eleven colleges with such a program (an incidence of 1.3 per 1000). Available reports indicate that the infection rate in colleges has declined 30 per cent.

Extrafamilial contacts. A valuable paper by Twinam and Pope[34] calls attention to the fact that failure to find the source of infection within a household should only serve as a stimulus for added search among the extrafamilial contacts.

County accreditation. Hailed as a "new idea in human tuberculosis control," county accreditation applies to human beings some of the technics used in eliminating tuberculosis from cattle. The plan, initiated in Minnesota, consists of awarding certificates to those counties where reasonable success has been obtained in finding and controlling tuberculosis according to established standards. Details are to be found in an article by Myers,[35] but briefly the standards require an average death rate of 10 or less per 100,000 population and a tuberculosis infection rate, as evidenced by a positive tuberculin test, of less than 15 per cent among high-school seniors. At least seven of Minnesota's eighty-seven

counties have already been accredited. A worthwhile step has been taken.

Simplified procedures. Case finding is "big business"[36] and, as has been pointed out, mass surveys have received great impetus from the war. Because of the increased volume of the work, unproductive tasks must be eliminated. Simplified procedures employed in New York City include, among other things, abbreviated history taking, elimination of routine physical examination and interpretation of x-ray films according to an established code.

Chemotherapy and Vaccines

The discovery of the sulfonamides has led to a search for related chemicals that might be of value in the treatment of tuberculosis. The zeal of the bacteriologists hunting for a vaccine is a match for the fervor of the chemists. Chemicals and vaccines have been found — but, although they appear to be of some usefulness in the laboratory, their worth in the clinic must still be demonstrated. Skepticism in the evaluation of experimental research is a sound attitude; cynicism is not.[38]

Chemotherapy. The sulfones have displaced the sulfonamides in interest.[39, 40] The in-vitro action of these chemicals in inhibiting growth of tubercle bacilli roughly parallels their therapeutic effects in guinea pigs.[38] Up till now promin, the sodium salt of *p, p'*-diaminodiphenylsulfone-*n,n'*-didextrose sulfonate, has been subjected to the greatest amount of study. It is definitely established that promin has a deterrent effect on tuberculosis in guinea pigs,[41, 42] and even when the experimental tuberculous process has already developed it can be resolved under the influence of this chemical.[43] Some guinea pigs, with the aid of promin therapy, develop such a high degree of immunity to tuberculosis that no macroscopic evidence of the disease can be found a year or more after therapy is discontinued.[44] Inhalation of nebulized promin is said to be even more effective than when the drug is given by mouth.[45]

Human experiments with promin are less encouraging. Given by mouth to 32 patients, the drug was more toxic than for guinea pigs and it appeared incapable of sterilizing the body of tubercle bacilli.[46] When it was given by the massive intravenous-drip method,[47] no beneficial effect was observed in 12 patients treated. British investigators[48] have had some success in treating laryngeal tuberculosis by applying promin locally and believe that further experiments are warranted.

At present other derivatives of diaminodiphenylsulfone are coming under investigation.[49] Of these, disodium formaldehyde sulfoxylate diaminodiphenylsulfone has been found to be less toxic for guinea pigs[50, 51] and appears to be of some promise. Research at the National Institute of Health indicates that phosphoryl derivatives should be investigated more thoroughly.[52]

Vaccines. Vaccination for the prevention of tuberculosis is by no means a new idea.[53] The only justification for taking this topic up is that two recent attempts at developing a safe and reliable vaccine appear worthy of mention.

Steenken and Gardner[54] have used the living avirulent bacterial dissociates of five different strains of tubercle bacilli in an effort to enhance the low resistance of the guinea pig to tuberculosis. They found that the immunity of guinea pigs, as determined by the subsequent inoculation of a virulent strain, could be increased. They believe that they have obtained proof that the avirulent dissociate is not devoid of antigenic properties and that immunity may not be type specific.

Potter[55, 56] has approached the vaccine problem somewhat differently. He noted that whereas tubercle bacilli may remain alive for two or more years under high vacuum when stored dry, they are readily killed at body temperature in the absence of oxygen if sufficient moisture is present. His technic is to give the tubercle bacillus an environment where its metabolic needs are high and at the same time deprive it of an essential constituent — oxygen. In this way Potter demonstrated that tubercle bacilli gradually die off and that all the bacilli are dead after one month's incubation in the moist state at 38° C. and under a high vacuum. By this method an avian strain (P_4) was prepared as a vaccine, and the virulent organism itself was used for subsequent tests in rabbits. A greater degree of immunity was conferred on the experimental animals than had been obtained with any of the earlier vaccines used. But since the immunity was incomplete, other studies are now in progress to improve the method of vaccination.

Surgery

Current trends in collapse therapy have been analyzed by Drolet.[57] Summarizing a five-year (1937-1941) survey of one hundred and one Canadian and American hospitals with a total bed capacity of 33,050, he found that about 50 per cent of all patients were given some form of collapse treatment. Apparently the number of patients receiving artificial pneumothorax was stabilized during this period, but the number of phrenic nerve operations decreased 8 per cent. On the other hand, there was a 34 per cent increase in the number of intrapleural pneumolyses. About 4 per cent of the patients in sanatoriums were subjected to thoracoplasty in 1941 and, compared with 1934, there was a fourfold increase in the number of patients who had this operation. In the New England states the ratio of patients subjected to thoracoplasty has increased from 56 to 89 per each 1000 patients. But, as Davidson[58] and Churchill and Klopstock[59] point out, analysis of current trends has but a limited usefulness as a guide to therapy in a field as rapidly advancing as thoracic surgery.

The treatment of pulmonary tuberculosis complicated by tracheobronchial disease is a specific problem that continues to be the subject of considerable debate. Myerson,[60] who believes that tuberculosis of the bronchus and trachea has a good prognosis, regards pneumothorax as "superfluous once a bronchial lesion develops." Salkin and his coworkers,[61] on the other hand, favor the use of collapse treatment except in cases complicated by bronchial stenosis. Their conclusion is, "Some of our best results of bronchitis have followed the use of pneumothorax and thoracoplasty." Unfortunately by placing in one category those cases treated by pneumothorax and those treated by thoracoplasty, these authors have evaded one of the most controversial aspects of the entire problem. Both procedures — pneumothorax and thoracoplasty — must be analyzed independently if there is to be any clarification of the disputed issues.

Considerable light was thrown on the subject of tracheobronchial tuberculosis in a recent symposium.[62–64] The consensus is that the presence of tuberculous bronchitis greatly complicates the treatment of the pulmonary lesions. Pneumothorax gives poor results and, when it is ineffective, it is worse than "superfluous," for it encourages complications, such as empyema and unexpanded lung. In cases of definite stenosis, neither pneumothorax nor phrenic nerve operations are as effective as thoracoplasty. The advantages of thoracoplasty can be summed up as follows: it is the safest procedure, atelectasis seldom results, infection of the pleural space is rare, and late suppurative changes within the lung are prevented.

According to Rafferty and Shields[65] pneumothorax is to be condemned in the presence of bronchial stenosis, for it causes interference with bronchial drainage and encourages atelectasis. They advocate the following plan of management when bronchial disease is discovered: attention should be centered mainly on the bronchus rather than on the pulmonary lesion; the idea of collapse treatment should be abandoned, at least temporarily; early treatment should consist of a longer than average trial of bed rest; artificial pneumothorax may be cautiously attempted if the bronchial disease appears to be slight; and thoracoplasty, in most cases, is preferable to pneumothorax.

From a purely theoretical standpoint lobectomy and pneumonectomy may be the procedures of choice when stenosis complicates the usual forms of treatment. That resection of a lung is practical as well as theoretical is being borne out by a gradually accumulating mass of evidence. In a group of 12 cases reported by Benedict,[66] one lobectomy and three pneumonectomies were done. Of the pneumonectomies, one was done after an unsuccessful thoracoplasty. There was only one death, and that was due to subsequent extension of the disease in the contralateral lung. Behrend[67] points out that pneumonectomy should be limited to those cases in which there is chronic ulcerative tuberculosis of the bronchus with ipsilateral pulmonary disease.

The number of lobectomies done for tuberculosis is gradually increasing. Drolet[57] reports that there were only 9 done in 1937 but 14 in 1938, 16 in 1939, 25 in 1940 and 28 in 1941. The rationale for lobectomy is clearly outlined by Churchill and Klopstock.[59] Lobectomy and pneumonectomy are procedures distinctly different from one another, each with its own set of indications. Pneumonectomy is not an alternative to collapse therapy since it is both irreversible and nonselective. On the contrary, lobectomy is highly selective and is more conservative of pulmonary function than a seven-rib thoracoplasty. A lobectomy may be considered as an alternative to artificial pneumothorax when there has been irreparable destruction of lung substance. Lobectomy shortens the span of treatment, maintains (better than thoracoplasty) the integrity of the thoracic cage, and removes the offending lesion. If, after bed rest and pneumothorax treatment, "there is good reason to believe that the therapeutic goal of a re-expanded lung, with a closed lesion, cannot be achieved within a reasonable length of time, lobectomy may be considered."

Minor Notes

Pregnancy. Although pregnancy is an added burden to a woman with tuberculosis, the current trend is toward less interference with the pregnancy and more treatment of the tuberculosis. Interruption of pregnancy is being advocated less and less.[68]

Two recent papers are especially deserving of mention. One report concerns a group of 86 women, eighteen to thirty-nine years of age, whose pregnancy was allowed to go to full term.[69] Of these, adequate follow-up on 82 revealed that only 15 (18 per cent) were dead, in contrast to 39 per cent deaths for all women of the same age group discharged from the sanatorium for the first time during the same period (1921-1940). No explanation is advanced for the puzzling statistical conclusion that the death rate of all women between the ages of eighteen and thirty-nine is double that of the pregnant group. The authors remark conservatively that "while this group is too small to warrant definite conclusions . . . it seems to indicate that when tuberculosis is properly treated pregnancy probably does not adversely affect the tuberculous process."

The second paper is that of Lyman,[70] who made an intensive study of 1818 women discharged from the Gaylord Farm Sanatorium. In order to determine the effect of marriage and pregnancy on the course of the disease he divided his patients into three groups — single, married and later married. Follow-up studies revealed that of 782 married women 41 per cent were dead and that of the 721 single women 51 per cent were dead. But, sur-

prisingly, there were only 40 deaths (13 per cent) of the 315 later married. In this group, if reactivation of the disease occurred at all, it did so without exception during pregnancy or within three months post partum. In the light of Lyman's statistics, advice against marriage to a young woman with arrested tuberculosis appears, on the whole, unjustifiable.

The need for the routine inclusion of chest x-ray examination in prenatal clinics and lying-in hospitals cannot be urged too strongly. Recent evidence proves that ten times as many cases of active tuberculosis can be found in those hospitals where routine x-ray screening is done than in those hospitals where no such program exists.[71]

Anatomy of the tubercle bacillus. The electron microscope has helped to elucidate some of the controversial details concerning the structure of the tubercle bacillus, since it allows for full resolution of an object at magnifications up to 100,000. One disputed point — the question of the capsule — has been settled. Electron photographs show that a membrane or capsule is uniformly present and that in some instances it contains granules.[72]

New technics. By the use of fluorescent microscopy tubercle bacilli can be demonstrated with greater rapidity and with a greater number of positive tests than by the use of ordinary staining technics.[73]

The chorioallantoic membrane of the chick embryo can be made to serve as a reliable rapid culture medium for the differentiation of tubercle bacilli, especially regarding degrees of virulence. Within six days after implantation of suspensions of bacilli, 96 per cent tubercle formation was present in the membranes implanted with a virulent strain, in contrast to only 18 per cent tubercle formation in those implanted with a closely related but avirulent strain.[74]

Serum albumin and globulin, as determined by electrophoresis methods, show changes that parallel the clinical course of tuberculosis, both in experimental animals and in human beings.[75]

Ascoli,[76] in transplantation experiments on calves, has brought forth evidence to show that presence of an active tuberculous nodule enhances resistance to tuberculosis. Further work along the lines suggested by his research should be of considerable interest.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

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CASE 30021

PRESENTATION OF CASE

First admission. A seventy-year-old retired dentist entered the hospital because of swelling of the legs.

The patient had been in excellent health until the age of sixty-five, at which time he had several episodes of hemoptysis. Sputum examination and x-ray films of the chest were positive for tuberculosis. He spent thirteen weeks in a sanatorium, and was sent home without any further signs or symptoms. From that time on he had been bothered by "gas in the stomach."

About six months before admission the patient noticed the insidious onset of edema of the lower extremities, which progressed and extended up to the midcalf. This was associated with a sense of uneasiness and tiredness in the legs, but there was no pain, and no dyspnea or orthopnea. He had lost about 9 pounds but believed that this was due to the change in his life consequent to his wife's death.

Physical examination showed a well-developed, poorly nourished man, with sacral edema. The thoracic wall was deformed, the sternum being thrust anteriorly and rotating to the right. The cardiac border could not be made out, but the sounds were of good quality and regular. There was slightly diminished resonance throughout the right lung, but no rales were heard anywhere.

The blood pressure was 190 systolic, 100 diastolic. The temperature was 98.6°F., the pulse 72, and the respirations 20.

Examination of the blood showed a red-cell count of 3,880,000, with a hemoglobin of 12.2 gm. per 100 cc. The white-cell count was 18,200, with 86 per cent neutrophils. Urine examination showed a specific gravity of 1.015, a + test for albumin, and rare red and white cells. A blood Hinton test was negative. The blood sugar was 61 mg. per 100 cc., the nonprotein nitrogen 32 mg. A phenolsulfonephthalein test gave 20 per cent excretion in fifteen minutes, with a total of 60 per cent at the end of two hours.

X-ray examination of the chest showed a hazy and linear density throughout the right upper lung field. Linear, sharply defined areas of increased density were seen throughout both midlung fields. The diaphragm was low in position, with limited expiratory motion. A Graham test was negative. A gastrointestinal series was noncontributory. An electrocardiogram showed normal rhythm, a rate of 70 and slight slurring of R_2. The ST segments in Leads 1, 2 and 4 were slightly concave, suggesting a digitalis effect. The T waves were low throughout. There was sinus arrhythmia. The patient was discharged at the end of six days with a diagnosis of nutritional edema.

Second admission (three months later). After discharge, the patient placed himself on a regime of essence of peppermint, sodium bicarbonate and luminal, with considerable relief of his stomach distention. He also took 1½ gr. of digitalis daily. The swelling of the legs increased and involved the thighs and hips. During the week before admission he noted decrease in acuity of close vision, dullness of his sensorium and a general feeling of inadequacy. There had been considerable itching of the skin and some gain in weight.

Physical examination showed marked boggy and pitting edema, extending up to the lower border of the scapulas. There was some scrotal edema. Scattered, fine, crackling rales were heard over the upper right chest anteriorly and posteriorly, with dullness in the right upper chest anteriorly. The examination was otherwise the same as previously.

The blood showed a red-cell count of 4,060,000, and a white-cell count of 7700, with 65 per cent neutrophils. The urine had a specific gravity of 1.014 but was otherwise negative. The nonprotein nitrogen was 30 mg. per 100 cc., and the blood protein 6.3 gm., with 4.0 gm. of albumin and 2.3 gm. of globulin — an albumin-globulin ratio of 1.7.

The patient continued to take digitalis daily. On the third hospital day he was given 1 cc. of Mercupurin intravenously. His urinary output was between 1750 and 1250 cc. on an intake of about 1400 cc. daily. A phenolsulfonephthalein test on the fourth hospital day gave 10 per cent excretion in fifteen minutes, and a total of 40 per cent at the end of two hours. The nonprotein nitrogen was normal. On the fifth hospital day the urine showed a +++ test for albumin and contained many red cells, which persisted for almost three weeks. During the second week the temperature ranged between 100 and 102°F.; the pulse was about 80, and the respirations 25. Cultures of the blood and urine were negative. An intravenous pyelogram performed on the tenth hospital day showed a normal outline of the left kidney. Several calcified nodes were seen overlying the left kidney. The kidney and psoas outlines on the right were not visualized. Intravenous dye appeared promptly on the left side. The left calyxes and pelvis were incompletely visualized but were not grossly abnormal. The right calyxes

*On leave of absence.

were not well seen. The right lower calyx was enlarged and deformed. The examination was not entirely satisfactory. A cystoscopy on the twentieth day revealed bloody urine in the bladder, from which a handful of clot was removed. There was slight trabeculation; both ureteral orifices were normal, and clear urine was seen coming from both. The prostate was enlarged, but no masses could be felt in the pelvis. A retrograde pyelogram showed the right superior and inferior calyxes to be separated, and there was a questionable filling defect. One of the right middle calyxes was somewhat blunted, and the kidney appeared enlarged. The left kidney and pelvis were normal.

The patient was given one transfusion of blood and received a high-calorie, high-vitamin diet. His condition improved considerably after the first three weeks; the hematuria subsided, the edema disappeared, and he was discharged eight weeks after admission.

Third admission (two months later). The patient had felt well for the first four weeks and then developed a dull aching pain in the right flank, which became progressively severer. Standing seemed to aggravate it. He had nocturia four or five times but no other urinary symptoms. During the ten days prior to admission he had two attacks of vomiting. In the second one, the material was described as "catsup colored." He had swelling of the legs on two occasions. He thought that he had lost about 6 pounds during this period.

Physical examination showed soft pitting edema of both ankles, with scaling of the skin. The lungs were clear. The heart was of normal size. The sounds were regular and of good quality. There was an occasional dropped beat. A rather firm, movable, tender mass was palpated in the right flank, which shifted slightly, if at all, with respiration. The mass was the size of a grapefruit, and its upper border disappeared under the costal margin. Many dilated veins extended over the abdomen to the lower thorax.

The blood pressure was 100 systolic, 40 diastolic. The temperature was 98°F., the pulse 80, and the respirations 20.

Examination of the blood showed a red-cell count of 3,510,000, with a hemoglobin of 70 per cent. The white-cell count was 9600, with 71 per cent neutrophils. The urine showed a + test for albumin and occasional red and white cells; the specific gravity was 1.018. The blood sugar was 111 mg. per 100 cc., and the nonprotein nitrogen 34 mg. The blood chloride was 99.9 milliequiv. per liter, and the carbon dioxide combining power 22.5 millimols per liter. The blood protein was 7.2 gm. per 100 cc. Two cultures of the urine were negative; one showed moderate numbers of nonhemolytic streptococci, two showed *Staphylococcus albus*, and one showed colon bacilli and enterococci.

Retrograde pyelograms failed to define the outline of the right kidney accurately, but it appeared to be enlarged. There was upward displacement of the upper part of the ureter, without lateral displacement. All the calyxes were somewhat enlarged, irregular and blunt. There was considerable anterior displacement of the right ureter. Several non-opaque filling defects were seen in the calyxes, which were interpreted as stones or blood clots. X-ray films of the chest taken about eight months after the first films showed progression of the process, especially in the base and the lateral aspect of the left lung field. The process consisted of flecky and streaky areas of increased density in the central and lateral lung fields. Several areas of increased density were apparent in the region of the left base, as well as a triangular dense shadow close to the right hilus.

The patient was discharged at the end of the fourth week without apparent change in his condition.

Final admission (four months later). For about two months the patient remained the same. An x-ray film of the chest during this period showed further progression of the pulmonary process. The lesions had a more sharply outlined and nodular appearance than formerly. He developed progressive shortness of breath and cough. The abdomen increased in size. Breathing became progressively more difficult.

Physical examination showed a pale, emaciated man in marked respiratory distress. There was dullness anteriorly over the right lower lobe, with decreased breath sounds and definite egophony. Scattered rales were heard over both lower lobes. The abdomen was grossly distended, and there were many large and prominent veins.

The blood showed a red-cell count of 3,820,000, with 10.7 gm. of hemoglobin. The white-cell count was 6600, with 76 per cent neutrophils. The urine was negative. An abdominal paracentesis yielded 5000 cc. of greenish fluid, with a specific gravity of 1.016 and a protein content of 2.2 gm. per 100 cc. Following the tap, there was marked relief of the respiratory distress, and a large, firm, nodular mass was palpable in the right upper quadrant. X-ray studies of the chest showed questionable fluid in the right pleural cavity.

The patient's condition gradually became worse, and he died on the tenth hospital day.

Differential Diagnosis

Dr. Joseph C. Aub: May we see the x-ray films?

Dr. Laurence L. Robbins: The gastrointestinal films simply show anomaly in position. So far as the chest is concerned, I believe that there is definite evidence of tuberculosis in the right apex. There is something more, however — a diffuse linear process involving both lungs. These films were taken at the time of the original admission. After an interval of about eight months, the appearance of the chest changed considerably. In addition to what was previously present, there are now definitely round

shadows. These shadows I believe are superimposed on the other process. This shadow here is what raised the question of fluid, and I should think that it is perfectly consistent with fluid in the right pleural cavity.

So far as the intravenous pyelograms are concerned the majority of films were unsatisfactory. This retrograde pyelogram was done eight months after the first admission and is the one from which most information was obtained. Of greatest significance is the fact that the lower pole of the kidney is obscured and not seen, but I cannot visualize a definite mass. There is elongation of the two lower calyxes, with displacement of the ureter forward.

DR. AUB: In the diagnoses we must place an old one — pulmonary tuberculosis — and sclerosis of the aorta, because of hypertension and a distortion of the chest, with change in the position of the heart. Incidentally, this man was seventy years old and I have no desire to make a single diagnosis. The older the patient, the more diagnoses he rates.

Then we come to the mass in the abdomen, which may have several interpretations. The stomach was displaced, which Dr. Robbins says was a congenital anomaly; but it also might have been due to the mass displacing it. From the beginning there was evidence of obstruction to the vena cava. First there was edema, then increased venous flow in the abdominal wall with many superficial veins; so whatever was present in the abdomen obstructed the vena cava in a progressive manner. The normal blood protein of 6.3 gm. also fits in with the idea that obstruction may have been the cause of the edema. The next diagnosis that one has to make is a retroperitoneal tumor mass in the region of the right kidney. It may have originated from the kidney or from the adrenal gland, or it may have been a primary retroperitoneal tumor. I think that one must arrive at the conclusion that the mass was a metastasizing neoplasm, since the masses shown in the x-ray film of the chest are suggestive, although not typical, of metastatic neoplasm rather than of tuberculosis. The only other diagnosis I can make is tuberculosis of the kidney. The patient had hemorrhage from the kidneys, which suggests tuberculosis, and we know that he had pulmonary tuberculosis. If it were tuberculosis of the kidney, I should expect, but not insist, that there would have been evidence of tuberculosis in the bladder. The only suggestion of anything wrong with the bladder is the slight trabeculation. Extrarenal tumors are of various types — sarcomas, neurofibromas, fibromas, adrenal-rest tumors and cysts; but none of these appeal to me because the lesion is obviously in the kidney, particularly in the calyxes, pushing the ureter forward and obstructing it. Does this film suggest obstruction?

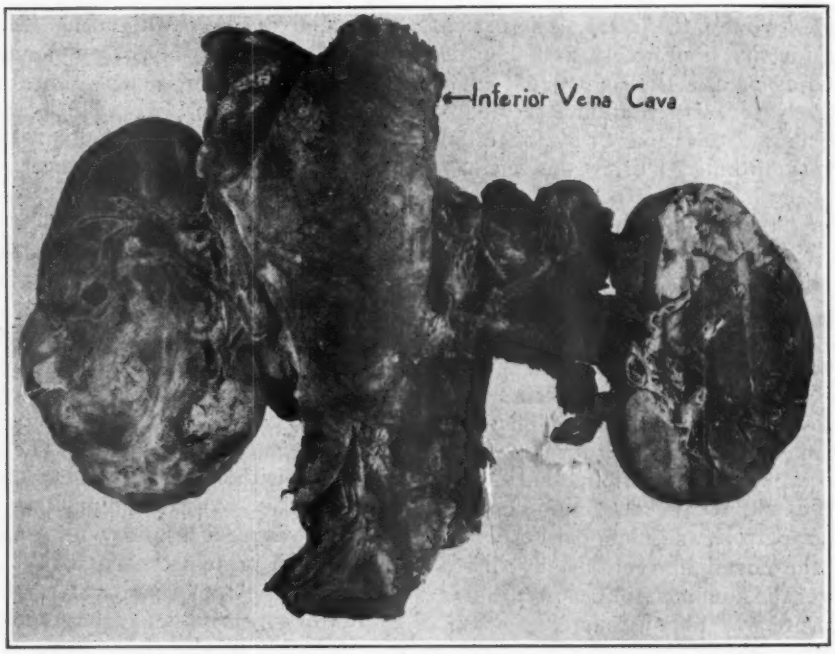

FIGURE 1. *Renal-Cell Carcinoma of Right Kidney with Extension into Both Renal Veins and Inferior Vena Cava.*

DR. ROBBINS: I do not believe that there is much obstruction by the process; the ureter is displaced forward.

DR. AUB: So we come to the diagnosis of the type of neoplasm of the kidney. Now, I leave an area of relative security and plunge into a less secure one. This may have been a hypernephroma in which there was a hemorrhage, as evidenced by bleeding. If it were a hypernephroma I should expect to have seen more definite snowball-like lesions in the x-ray films of the chest. Somehow I rather suspect that this lesion was more in the hilar region of the kidney, and when tumors are primarily located there they are usually papillary epitheliomas. That is the diagnosis which I think is more likely to be made, although these tumors are less frequent than the hypernephromas. I believe that it broke through, grew outside the kidney and pushed the ureter to an anterior position, with a good deal of growth behind the kidney. From the description the ureter was probably involved, although I do not believe that I can make that diagnosis from these x-ray films. It also produced obstruction of the vena cava and pushed the duodenum over. These tumors may also have pulmonary and bone metastases. I do not believe that this was renal tuberculosis.

The patient was discharged eight weeks after the second admission. Why they did not operate then I do not know, but I suspect that it was because of the x-ray films of the lungs.

DR. FLETCHER H. COLBY: I saw the patient during his second admission. It is not quite clear from the history that the patient was in a critical condition even at that time. When it was considered whether to cystoscope the patient, Dr. Dwight Siscoe wrote in the record, "It might be considered unwise by some to put him through a retrograde pyelogram but to me it seems to be either that or just sitting back and waiting until he dies." In other words, the patient was in extremely poor condition even as early as the second admission. At that time there were dilated veins in the abdominal wall. We suspected that the bleeding, which was gross and copious, might have been due to the Mercupurin. It seemed to me, however, that there was probably some other cause, such as a bladder tumor. The patient was cystoscoped, and the bladder was normal except for some trabeculation, which is evidence of mild obstruction rather than of tuberculosis. At the time of discharge it was thought that the patient probably had a malignant tumor of the right kidney, with obstruction to the vena cava. The question of operation was never seriously raised because he was in such poor shape and because operation offered him nothing. It is interesting that he had 4600 units of radiation with the 200-kilovolt machine during the last admission and temporarily improved a great deal.

CLINICAL DIAGNOSIS

Retroperitoneal tumor.

DR. AUB'S DIAGNOSES

Papillary epithelioma of pelvis of right kidney, with extension producing obstruction of the vena cava and with metastases to lungs.
Pulmonary tuberculosis.
Sclerosis of aorta.

ANATOMICAL DIAGNOSES

Renal-cell carcinoma of right kidney, with extension into both renal veins and the inferior vena cava and with metastases to lungs, liver and right adrenal gland.
Pulmonary tuberculosis.

PATHOLOGICAL DISCUSSION

DR. BENJAMIN CASTLEMAN: From this photograph (Fig. 1) you can see that the right kidney was replaced for the most part by a large tumor, but the most striking thing was this large mass between the two kidneys. The inferior vena cava measured 6 cm. in diameter and was filled with tumor thrombus. This tumor extended into the right renal vein, which was practically obliterated and shortened by the tumor, and then into the vena cava. Other interesting findings were that the left renal vein contained two movable tumor thrombi and that there were metastases to the left kidney. The right adrenal gland was completely replaced by tumor. This tumor thrombus in the vena cava had extended down into both iliac veins and had produced partial obstruction.

The tumor was a hypernephroma or what we prefer to call renal-cell carcinoma. The tumors of the renal pelvis are usually papillary tumors that extend down the ureter. I have never seen one invade the renal vein or extend into the vena cava. The renal tumor that usually invades the vena cava is the renal-cell carcinoma which arises from the parenchyma; the other tumors that are prone to do that are the hepatomas and the carcinomas of the adrenal cortex. The lungs showed numerous metastases as well as active tuberculosis. It is interesting that the tumor thrombus in the inferior vena cava extended up to the liver and also into the hepatic veins and had produced metastases to the liver.

DR. AUB: How about the bones?

DR. CASTLEMAN: They contained no metastases.

CASE 30022

PRESENTATION OF CASE

A seventy-two-year-old white widowed domestic entered the hospital because of swelling of the abdomen and legs of four weeks' duration.

The patient was well until about four to five weeks before admission, when she noted the onset of swelling of the abdomen and ankles. At about the same time she developed a cough and a slight head cold. There were oliguria and darkening of the urine.

She experienced loss of strength and appetite, dyspnea on exertion and easy fatigability. She had had no pain, change in bowel habits, dysuria, nausea, vomiting, hematemesis or jaundice. She was not certain whether she had recently had one or two clay-colored stools.

Fourteen years before admission the patient had a secondary syphilitic rash, with a positive dark-field examination for spirochetes. She was treated for two years, and the blood became seronegative after the first eight months.

Physical examination showed a poorly nourished, thin woman in no discomfort. The skin was slightly icteric, with numerous superficial varicosities of the legs and occasional varices of the lower abdomen. There was soft pitting edema of both legs to the knees. A few fine crackles were heard at the left base. No definite cardiac enlargement could be made out. There was a moderately harsh, blowing precordial systolic murmur, heard best in the pulmonic and parasternal areas. The sounds were regular and of good quality. The abdomen was protuberant, with a fluid wave and shifting dullness. The liver was percussed two fingerbreadths below the costal margin; it was not palpable. One examiner thought there was a large mass rising from the pelvis to the umbilicus and attached to the uterus.

The blood pressure was 138 systolic, 80 diastolic. The temperature was 98.6°F., the pulse 80, and the respirations 18.

Examination of the blood showed a red-cell count of 4,470,000, with 11 gm. of hemoglobin. The white-cell count was 11,000, with 80 per cent neutrophils. A blood Hinton test was negative. The urine had a specific gravity of 1.026 and gave a + test for bile; the sediment of a catheterized specimen contained 5 to 15 white cells and 15 to 20 red cells per high-power field. The stools were yellow, watery and guaiac negative. The nonprotein nitrogen was 20 mg. per 100 cc., and the protein 5 gm. The direct van den Bergh was 1.8 mg. per 100 cc., the indirect 2.5 mg. The prothrombin time was 29 seconds (normal, 16 seconds). The hematocrit was 44.5. A cephalin flocculation test was ++ in twenty-four hours and +++ in forty-eight hours.

An intravenous pyelogram was negative. On x-ray examination there was a large, soft-tissue mass, probably an enlarged uterus, filling almost the entire pelvis and pressing on the roof of the bladder. A gastrointestinal series and a barium enema were negative except for the presence of fluid in the peritoneal cavity. No esophageal varices were seen. X-ray films of the chest showed some linear areas of atelectasis at both bases, probably due to abdominal ascites. The lung fields were otherwise clear. The heart was transverse in position but not greatly enlarged.

The patient's condition improved slightly during the first week. The urine cleared almost completely, and there was no bile. Abdominal paracentesis on the sixth day yielded 6 liters of clear, straw-colored fluid; no tumor cells were seen. Peritoneoscopy showed a large, round, rather hard, white mass, approximately 15 cm. in diameter, in the pelvis. The liver edge was irregular and nubby but of normal color. There was no evidence of tumor metastases.

Although there was a moderate degree of drainage through the peritoneoscopy incision, the fluid seemed to reaccumulate in the next four to five days. On the fifteenth hospital day the patient became drowsy and irresponsive. She was given daily intravenous fluids with vitamins. The prothrombin time was 30 seconds (normal, 20 seconds). The hematocrit was 39.7, and the nonprotein nitrogen 18 mg. per 100 cc. The blood chloride was 105.5 milliequiv. per liter, and the carbon dioxide combining power 20.4 millimols per liter. The following day the patient became comatose. Examination was essentially as before, except for a fetid, somewhat mousy breath and hyperactive tendon reflexes and knee jerks. The urine gave a + test for albumin and a ++ test for bile, and contained innumerable white cells. A culture gave many colonies of colon bacilli. The nonprotein nitrogen, however, was only 16 mg. per 100 cc. She remained in coma and died on the twenty-fifth hospital day.

Differential Diagnosis

Dr. Francis D. Moore: This is the story of a previously well seventy-two-year-old woman who, over a four-week period, developed evidence of obstruction of the portal vein and of the veins of the legs, became acutely ill, passed into coma with jaundice, and died. To this train of events we have added a pelvic tumor and some evidence of infection of the urinary tract. The relation of the latter two to the main train of events is not too clear. The patient's story suggests the gradual onset of a systemic disease, probably due to visceral damage, with few localizing symptoms but with loss of weight, strength and appetite, dyspnea and fatigability. The only localizing factor that we have is the questionable story of clay-colored stools and the development of jaundice.

The fact that fourteen years ago she had a secondary syphilitic lesion may have some bearing on the present trouble. The treatment, however, sounds adequate. She became seronegative at that time, and on admission had a negative Hinton test, so for the moment I shall disregard syphilis.

On entry the skin showed superficial varices of the legs and lower abdomen, which may have been the telangiectatic type of varices that one sometimes sees in parenchymatous disease of the liver. The edema seemed to be confined to the legs. No cardiac enlargement could be made out, and this, together with the x-ray findings, the other physical findings and the essentially normal blood pressure, tends to rule out heart disease as the fundamental lesion. Another

lesion that in a person of this age could well be of great importance is chronic pyelonephritis. She had red and white cells in the urine, as well as albumin. Since the urine concentrated, however, to 1.026 and since she never showed an elevation of the nonprotein nitrogen I think it is best to regard these urinary findings as due to a colon-bacillus cystitis, probably associated with the pelvic tumor, which was pressing on the bladder and probably altering its function.

The physical findings pertaining to the liver are highly significant. She was slightly icteric, she had a fluid wave, and the liver was apparently enlarged. To go with this, there was bile in the urine and a van den Bergh of 2.5 mg. indirect and 1.8 mg. direct. A proportion of direct to indirect bilirubin of less than 75 per cent is strongly against an extrahepatic cause for jaundice. In other words, obstruction of the common bile duct usually produces a percentage of direct to indirect bilirubin that is 75 per cent or higher. The range of this proportion does not definitely indicate parenchymatous liver disease as its source but it certainly is strongly suggestive. Low percentages of direct to indirect bilirubin are usually associated with hemolytic processes. We have no evidence for that here, as the red-cell count was in the normal range.

The prothrombin time was almost twice the normal, which certainly is also suggestive of liver disease. Furthermore, we see later that she received daily intravenous infusions with vitamins and that the prothrombin time became 30 seconds, with a normal of 20 seconds. Owing to the facts that most intravenous vitamin mixtures used in this hospital at the present time contain vitamin K or one of its precursors and that after receiving these vitamins intravenously she still had an elevated prothrombin time, we have here further excellent evidence that this patient had severe liver damage. As a matter of fact, the response of the prothrombin time to parenterally administered vitamin K is an excellent index of liver function, and this patient apparently showed no response at all. Fitting in with this concept is the cephalin flocculation test, which was +++ in forty-eight hours. The finding of 6 liters of clear straw-colored fluid in the abdomen is simply a part of this picture, the result presumably of portal obstruction. The serum protein of 5.0 gm. per 100 cc. is probably also an expression of hepatic failure, and the edema in the legs could have been due to this factor, although we do not necessarily see peripheral edema with a serum protein of 5.0 gm. She had a pelvic tumor, however, and with a local fault to aggravate the situation, edema progresses rapidly.

Peritoneoscopy showed a liver edge that was irregular and nubby but of normal color and there was no evidence of tumor metastases. This, I think, fits in perfectly with the concept that we are dealing here with diffuse liver damage, such as portal cirrhosis or possibly the end results of an earlier subacute hepatitis.

The peritoneoscopy also showed a 15-cm., white, round, large, hard tumor in the pelvis. We have no way of knowing whether it was connected with the uterus or with the ovaries or whether it had nothing at all to do with the reproductive organs. The patient was seventy-two years old and this makes any intrauterine lesion except an endometrial adenocarcinoma extremely unlikely, and yet for an adenocarcinoma of the endometrium to present a large, round, white mass in the pelvis would be most exceptional. Tumors of the ovary, however, frequently give this picture. In a woman of this age most of the common benign and malignant tumors of the ovary may be found. The surface of this tumor was not papillary and there were no implants on the liver or the peritoneum, and no tumor cells in the abdominal fluid, which makes papillary or pseudomucinous cystadeno-carcinoma of the ovary moderately unlikely. It could be a large fibroma of the ovary, and with the abdominal fluid, one might think that the fibroma was responsible for the abdominal fluid. We find that she has no fluid in her chest, however, and although this does not rule out fibroma of the ovary, it makes it less likely as a cause for the tremendous amount of abdominal fluid. Other ovarian tumors, including carcinoma of the ovary, can give tremendous amounts of abdominal fluid and even chest fluid without implants and without tumor cells in the fluid. The mechanism of fluid collection in such cases must be in some way related to that in the fibroma group. Therefore, we cannot say with certainty that the ovarian tumor in this woman was not responsible for the fluid collection. But with so much evidence of liver damage, I should think that the ovarian tumor was an incidental and secondary finding, so far as the general trend of this woman's disease and her death are concerned.

After she had been in the hospital for a time, she became comatose and developed a somewhat mousy breath and changes in her reflexes. The mousy breath is classically supposed to be an accompaniment of terminal liver damage. One wonders if this could be due to abnormal circulating amounts of acetamide and related compounds, which, in the purified state, smell like mouse feces.

I am unable to interpret the reflex changes. They could possibly be associated with cerebral thrombosis, a not uncommon terminal event in people of this age, no matter what the underlying pathologic process that is responsible for the depleted condition.

We therefore come down to the diagnosis of liver failure. Owing to the fact that she had massive ascites before the appearance of much jaundice, I think that she had portal cirrhosis rather than biliary cirrhosis associated with either cholangitis or obstruction of the bile ducts. The fundamental etiology for a portal cirrhosis is not clear from the

history. No mention is made of alcoholic intake, and there is nothing to suggest that she had subacute hepatitis in the past due to toxins other than alcohol.

Did she have a hepar lobatum? This is a late anatomic lesion due to tertiary syphilis in the liver, and in so far as it is an irreversible pathologic change, it can exist in the presence of a negative serologic test. The peritoneoscopic picture, however, was not that of hepar lobatum, and I should not expect that a patient would have liver failure of this degree on the basis of a hepar lobatum.

I am considering the ovarian tumor to be incidental because the only way in which it could produce this picture would be by liver metastases, for which we have no evidence. I shall make the reservation, however, that the ovarian tumor could have had something to do with the collection of fluid both in the abdomen and in the subcutaneous tissues of the legs. The likeliest solid, round, hard, white tumor of the ovary in a woman of this age is probably a solid or solid and cystic carcinoma. This can occur without papillary projections, and it probably is what she had. Fibroma or cyst is a second bet.

I believe that the patient's death was due to liver failure on the basis of portal cirrhosis, possibly associated with a terminal cerebral thrombosis.

Clinical Diagnoses

Acute hepatic insufficiency.
Icterus.
Ascites.
Ovarian cyst.

Dr. Moore's Diagnoses

Portal cirrhosis of liver.
Ascites.
Icterus.
Carcinoma of ovary.

Anatomical Diagnoses

Toxic cirrhosis of liver, with superimposed acute hepatitis.
Thrombosis of portal and splenic veins, recent.
Splenomegaly.
Ascites, slight.
Icterus.
Cystoma of left ovary.

Pathological Discussion

Dr. Benjamin Castleman: The autopsy showed a small liver that weighed only 950 gm. It was extremely cirrhotic, and the nodules of regenerated liver tissue varied from 0.3 to 1.0 cm. in diameter. This wide variation in the size of the nodules rules out the alcoholic type of portal cirrhosis and is characteristic of the healed atrophy or toxic type. What the toxic agent was remains unknown; but it is quite possible that in the antisyphilitic treatment twelve years previously an arsenical was used that was the cause of the liver damage. Microscopically there was evidence of a superimposed acute hepatitis. Recent thrombi were present in the distal portion of the splenic vein and in the main portal vein. The spleen was about twice the normal size, and varices were present in the esophagus. At the time of the autopsy there was only about 100 cc. of bile-stained ascitic fluid.

The pelvic mass proved to be an innocuous simple ovarian cyst, measuring 12 cm. in diameter, on the left side. The brain showed diffuse nerve-cell degeneration of a terminal nature; there was no thrombosis. We found no evidence of syphilis anywhere.

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The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to the [*New England Journal of Medicine*, 8 Fenway, Boston 15, Massachusetts.

MILITARY MEDICINE

Now that about 90 per cent of all residents, interns and medical students are either medical officers on inactive duty or enlisted men in the Army and Navy and are on an accelerated schedule, one cannot help but wonder how efficiently they are being taught regarding military medicine — that extremely specialized branch of medical practice in which all of them, sooner or later, will be involved.

The problems that confront the medical officer are, by and large, quite different from those that are ordinarily encountered in civilian practice. Of primary importance are the infections and parasitic diseases so prevalent in tropical and subtropical regions but relatively unheard of in temperate zones. Preventive medicine and sanitation assume most significant roles, and then comes the fact that the methods of medical and surgical treatment in combat zones are, of necessity, entirely different from those in civilian communities. And added to all this are the constant advances that are being made as the result of directed research or of experience, which rarely, if ever, are brought to the attention of the future medical officer and of which even the majority of their instructors are ignorant.

Undoubtedly the Government, at the moment, has no intention of changing the curriculums of medical schools. On the other hand, it seems reasonable that schools and teaching hospitals could turn out men who would have a more thorough and exact knowledge of the military aspects of medicine than they do at present and that this could be done with slight inconvenience and with little change in the methods of teaching that are considered to be basic to all forms of medical practice.

Prior to the present war, only a few of the medical schools in this country had departments of tropical medicine. Within the past two years, the schools lacking such facilities have been given the opportunity of sending members of their teaching staffs to take the regular two-month course in tropical medicine at the Army Medical School in Washington, the expenses having been met by a philanthropic organization. In addition, many of the schools have increased their instruction in preventive medicine and sanitation. Thus, it seems likely that the majority of schools have voluntarily revised their curriculums to cover, more or less satisfactorily, certain subjects that are of utmost importance to the medical officer. On the other hand, it seems extremely unlikely that instruction in medicine, surgery and the various specialties in the schools and teaching hospitals is conducted with the proper emphasis on military needs, largely owing to ignorance of the instructors regarding military medicine in general and recent advances in particular.

There appear to be two ways in which this state of affairs can be improved. In the first place, members of the teaching staffs should be thoroughly cognizant of the military aspects of their specialty and should advise their students to refer frequently

to military manuals, such as those published by the War Department and those sponsored by the National Research Council. Secondly, pertinent directives and monthly bulletins issued by the Army and Navy to their medical officers on active duty should also be forwarded to the commissioned residents and interns, to the enlisted students and to all members of the faculties of medical schools. In this way, proper emphasis could be placed on military medicine, and the physicians concerned with teaching and the future medical officers would be apprised concerning recent accepted advances in the prevention, diagnosis and treatment of disease — an accomplishment that would also benefit civilian practice.

DENTAL NEEDS IN CHILDHOOD

THE report, entitled "The Dental Needs of Massachusetts Children of Today," appearing in the January 6 issue of the *Journal* cannot fail to awaken the thought of the medical profession and those concerned with public-health problems. It emphasizes the dental conditions in the Commonwealth, but dental caries is a national problem and exists in its rampant form wherever the pattern of our present civilization is found. This report is a dual challenge, both to dentists and to the medical profession.

The immediate challenge is to the dental profession to find new or more efficient technics and methods that will restore the ravages of dental caries in our youth before the age of induction into the armed forces. One might even suggest the slogan, "Treat the teeth and win the war." When one recalls the appalling number of draftees who are rejected because of dental conditions and the reported number of extractions and dental restorations that are made by dentists in the armed forces, it is not difficult to appreciate what a burden the dental problem has been on the war effort. This curtailment of efficiency is just as real as the hazards of production caused by strikes or by industrial or tropical diseases. The immediate problem is to organize some program that will ensure adequate dentistry for all boys from the ages of approximately twelve to eighteen. If this could be accomplished, it is not too fantastic to believe that the final date of the ending of the war might be changed. Although the dental profession has been stripped of its youth, it is not too much to believe that the remaining dentists, if organized, could care for this age group. It would necessitate new clinics, reorganization of technical procedures, proper compensation for services rendered, and possibly some neglect of the dental problems of those beyond the draft age. As an emergency measure, dental attention for this age group should be made compulsory, just as is vaccination against smallpox.

Prevention, the second challenge of this report, is the same as that met by groups of pioneers in other fields of medicine. It is the challenge that has practically controlled tuberculosis, syphilis and innumerable other diseases. A great industry is not satisfied to employ skilled engineers to care for its injured: it develops new machinery and new safeguards until the effects of accidents are reduced or eliminated.

Although the prevention of dental caries is not a war problem, it is one of the peace to come. As has been explained in the report of the committee, the etiology of dental caries is unknown. Students in this field believe that the best lead is through the study of nutrition. Whether it is due to some chemical disturbance in the organic structure of the tooth or to a defect in calcification is a problem yet to be solved. An example that has been utilized, namely that of a post placed in the ground with subsequent decay depending on its structure, is apt. Undoubtedly, the tooth structure is laid down in utero, and the first few weeks of life must have a profound effect on the formation of the tooth. Caries may well be due to faulty construction, and to determine when and why this occurs is a challenge to both the dental and the medical profession.

MEDICAL EPONYM

PONCET'S DISEASE

Antonin Poncet (1849–1913), professor of surgery at Lyon, published a paper, entitled "Faits de polyarthrite tuberculeuse simulant des lésions rhumatismales chroniques déformantes [Tuberculous Polyarthritis Simulating the Lesions of Chronic

Deforming Rheumatism]" in *La lancette française, gazette des hôpitaux civils et militaires* (**70**:1219, 1897), a portion of which is translated below:

On very careful examination it is seen that we are dealing with a deforming polyarthritis of tuberculous nature. It is a bacillary bony manifestation, usually in young subjects. It may be seen in older persons and then is difficult to distinguish from chronic deforming rheumatism.

R. W. B.

MASSACHUSETTS MEDICAL SOCIETY

STATED MEETING OF THE COUNCIL

A stated meeting of the Council will be held in John Ware Hall, Boston Medical Library, 8 Fenway, on Wednesday, February 2, 1944, at 10:00 a.m.

Business:

1. Call to order at 10:00 a.m.
2. Presentation of record of meeting held October 6, 1943, as published in the *New England Journal of Medicine*, issue of November 25, 1943.
3. Report of Auditing Committee and of Treasurer.
4. Reports of standing and special committees.
5. Appointment of Delegates.
   (*a*) To the House of Delegates, American Medical Association, for two years from June 1, 1944.
   (*b*) To the annual meetings of the five New England state medical societies in 1944.
   (*c*) To the Annual Congress of the American Medical Association on Medical Education and Licensure at the Palmer House, Chicago, February 12 to 15, 1944.
6. Such other business as may lawfully come before this meeting.

MICHAEL A. TIGHE, M.D., *Secretary*

SECRETARY'S OFFICE

The following statement is submitted for publication in the *Journal* by order of the Executive Committee.

MICHAEL A. TIGHE, *Secretary*

* * *

The *Boston Herald*, issue of December 22, 1943, carried a news item to the effect that graduates of the Middlesex University School of Medicine, under a ruling issued from the office of the Surgeon General of the Army of the United States, would no longer be eligible for commissions in the Army Medical Corps.

In this item, C. Ruggles Smith, registrar and general counsel of this school, is quoted as suggesting that "the probable reason" for this action "was pressure from the American Medical Association."

A clipping of this item was sent to Dr. Olin West, secretary of the American Medical Association, whose reply is as follows:

December 27, 1943

Dr. Michael A. Tighe
Secretary, Massachusetts Medical Society
8 Fenway
Boston, Massachusetts

Dear Doctor Tighe:

Your letter of December 22 was delivered to this office this morning. I have read the newspaper clipping which was enclosed with your letter and have, of course, noted particularly the statement attributed to C. Ruggles Smith to the effect that the probable reason why recent graduates of Middlesex University Medical School have been notified that they will no longer be eligible for commissions in the "U. S. Medical Corps" was "pressure from the American Medical Association." This statement attributed to Mr. Smith in the item which appeared in the *Boston Herald* for December 22 is without any foundation in fact. None of us here knew anything whatever pertaining to the order issued by the Surgeon General of the United States Army to the effect that recent graduates of Middlesex would not be commissioned as medical officers until a copy of the order that had already been issued came to the Association's offices. In so far as I am informed, no one connected with the American Medical Association had even the slightest thing to do with the issuance of that order, and certainly no one here knew anything about it until the order had already been promulgated and distributed.

I sincerely hope that you have had a delightful Christmas Season and that the New Year will bring you a full measure of health and happiness.

With all good wishes, I am

Very truly yours,
[Signed] Olin West

On December 23, 1943, the Massachusetts Medical Society received the first authoritative word on this subject when it received the following memorandum from the office of the Surgeon General:

WAR DEPARTMENT
Army Service Forces
Office of The Surgeon General
Washington 25

3 December 1943

MEMORANDUM FOR: The Executive Officer,
Procurement & Assignment Service,
War Manpower Commission,
Room 609, 1778 Pennsylvania Avenue, N. W.,
Washington 25, D. C.

Subject: Discontinuance of Appointments in the Medical Corps, Army of the United States, of Graduates of Middlesex University College of Medicine, Waltham, Massachusetts.

1. It has been decided that effective this date, and including those cases now in process, that this office will no longer recommend the appointment of graduates of subject medical school as commissioned officers in the Medical Corps, Army of the United States.

2. This memorandum is submitted for your information.

For The Surgeon General:

DURWARD G. HALL
Lt. Col., Medical Corps
Assistant

A TRUE COPY:
[Signed] Durward G. Hall
DURWARD G. HALL,
LT. COL., MEDICAL CORPS
ASSISTANT

COMMITTEE TO AID THE DISTRICT RATIONING OFFICER

The committee of the Massachusetts Medical Society appointed last June to aid the district rationing officer has met several times with the representative in charge of food rationing of the Office of Price Administration, and has considered carefully a considerable number of physicians' certificates of patient's necessity. The majority of these requests have been granted; with many, however, it has been necessary to cut the amounts of food requested to a maximum allowance that was determined after conference with a number of recognized authorities. In others, only the basic ration has been approved.

This maximum was established as 32 pounds of processed foods and 40 pounds of meats and fats for a two-month period, or roughly double the amounts received on basic rations. These maximum amounts have been exceeded only in special cases, and only after review by the medical committee.

It has become increasingly evident, however, that an alarmingly large number of requests are being made to the rationing boards, and are being granted if they call for amounts of rationed foods within the prescribed maximum limits. Although the exact number is undetermined, it probably runs well into the thousands, and is a just cause for concern, since, with a restricted available quantity of certain foods,

that which is given to one individual in excess of his quota must be taken from his neighbor's allotment. The committee is well aware of this fact, and wishes only to see that a just and equitable distribution is maintained.

On October 16 and 23, 1943, the report of the Subcommittee on Medical Food Requirements of the National Research Council was published in the *Journal of the American Medical Association*. This committee had been studying for months the vexatious problem of medical food requirements for persons suffering from various diseases, and the committee of the Society has believed that it could do no better than accept this authoritative report, with what minor changes might be necessary to adapt it to local conditions.

Since our food allowances have tended to be generous as compared with those suggested by the Subcommittee on Medical Food Requirements, the chief change in policy is that of accepting the list of diagnoses submitted by the subcommittee as representing those diseases or conditions for which extra rations may be justifiably granted. This list is as follows: diabetes mellitus; tuberculosis; chronic nephritis *of the nephrotic type*; cirrhosis of the liver; severe hepatitis; chronic ulcerative colitis; chronic suppurative diseases, such as empyema and osteomyelitis; sprue; obstructive gastrointestinal lesions; high intestinal fistulas; and severe burns. No medical reason for extra allotments of sugar seems to exist.

In asking for extra rations, the doctor would do well to look at the list of maximum allowances suggested by the National Research Council and to remember that these really are maximum, not necessarily *optimum*, allowances.

It has seemed reasonable to the committee, however, despite the fact that these diagnoses have not been recognized by the Subcommittee on Medical Food Requirements as requiring extra rations, to grant increases, where they seem necessary to the attending physician, in pregnancy and in bona fide cases of anemia. The maximum allowance in these conditions has been established at 16 pounds of processed foods and 24 pounds of meat and fats for the two-month period.

It is believed that no extra allowances are necessary for patients convalescing from acute illnesses. These patients have presumably been on restricted diets while ill, and should have enough spare points available for whatever indulgences their convalescences might demand.

Requests for extra rations for all reasons other than those listed above and requests for quantities in excess of the above-mentioned maximums will be submitted to the district rationing officer for review. Changes in these regulations may be made from time to time as new information is added, or as supplies of certain foods become more restricted or more abundant.

Although cream is not now on the list of rationed foods, the need for conserving butterfat is urgent, and the butterfat percentage of cream available to the public has been set at 19 per cent. The milk companies have been receiving what seems to be an unnecessarily large number of doctors' prescriptions for cream in excess of this established percentage, and the co-operation of the physician in reducing the number is requested. Physicians are reminded that high percentages of cream are rarely needed except occasionally in cases of diabetes, certain liver conditions and true ulcerative colitis.

The members of the Massachusetts Medical Society and the other physicians of the Commonwealth will, of course, accept the trust that has been placed in them regarding the prescription of extra food rations, giving such certificates only into the hands of those patients who can honestly qualify for them. It will greatly lessen the confusion of food rationing if certificates of necessity are properly and completely filled out, and only such completely executed certificates need be accepted by local rationing boards. The age of the patient and the *exact* nature and severity of the disease should be put down. A considerable number of requests have to be returned for an exact diagnosis. The figures should give simply the pounds requested for one month or two months, not the ounces or points and so forth, as is occasionally done.

We must recognize all the difficulties and all the inconsistencies that are almost impossible to eradicate from a food-rationing system — the inconsistency of allowing identical basic rations to the lumberjack, the schoolgirl, the seamstress and the newborn babe; the inadequacy of available knowledge concerning many of the dietary needs in health and in sickness; the almost unlimited possibilities of food substitutions; the seasonal variations in food supplies; the logarithmic maze into which we are led by the translation of pounds into points; the absurdity of measuring butter on the same scale as meat, and of trying to establish comparative values between dried peas and canned tomato juice.

JOSEPH GARLAND, *Chairman*

NOTICES

BOSTON SOCIETY OF BIOLOGISTS

A meeting of the Boston Society of Biologists will be held in the Surgical Amphitheater (3A) of the White Building, Massachusetts General Hospital, on Wednesday, January 19, at 8 p.m.

PROGRAM

Vaso-Active Substances in Shed Blood: Their relation to assays of renin and angiotonin in hypertension. Dr. E. M. Landis.

The Physiologic Properties of Certain Plasma Proteins. Dr. F. H. L. Taylor.

Submicroscopic Structure of Muscle Fibrils. Drs. C. E. Hall, M. A. Jakus and F. O. Schmitt.

Dinner will be served in the Pay Cafeteria in the East Dining Room of the White Building at 6:30 p.m.

(*Continued on page xvi*)

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NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

The annual meeting of the New England Ophthalmological Society will be held at the Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, on Tuesday, January 18, at 8 p.m.

Following the business meeting, Dr. Algernon B. Reese will speak on the topic, "Surgical Treatment of Tumors of the Lid Margins."

NEW ENGLAND SOCIETY OF PHYSICAL MEDICINE

A meeting of the New England Society of Physical Medicine will be held at the Hotel Kenmore, Boston, on Wednesday, January 19, at 8 p.m. Dr. Herman A. Osgood will speak on the topic, "The Management of a Cancer Patient." This will be followed by a general discussion.

A council meeting will be held at 6 p.m., followed by an informal dinner in the Empire Room at 6:30 p.m.

SOUTH END MEDICAL CLUB

The next regular meeting of the South End Medical Club will be held at the headquarters of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston, on Tuesday, January 18, at twelve noon. Dr. Joseph F. Ross will speak on the topic, "Blood Banks and Blood Transfusions."

Physicians are cordially invited to attend.

NEW ENGLAND PATHOLOGICAL SOCIETY

The next meeting of the New England Pathological Society will be held on January 20, at 8 p.m., in the amphitheater of the Mallory Institute, Boston City Hospital. The program is as follows:

Clinical and Physiologic Aspects of Conflagration Injuries of the Lungs and Air Passages. Dr. Maxwell Finland.

Pathologic Anatomy and Histology of Conflagration Injuries of the Lungs and Air Passages. Dr. Timothy Leary.

An Experimental Investigation of Thermal Injuries of the Lungs and Air Passages. Dr. Alan R. Moritz.

All physicians and medical students are cordially invited to attend.

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Thursday, January 20

Thursday, January 20

*9:00–10:00 a.m. Medical clinic. Dr. S. J. Thannhauser, Joseph H. Pratt Diagnostic Hospital.

†5:00 p.m. Problems in the Treatment of Infantile Paralysis. Dr. William T. Green. Children's Hospital.

8:00 p.m. New England Pathological Society. Amphitheater of the Mallory Institute, Boston City Hospital.

Friday, January 21

*9:00–10:00 a.m. The Present Status of the Etiology of Hypertension. Dr. Lewis Dexter. Joseph H. Pratt Diagnostic Hospital.

4:30 p.m., 8:00 p.m. New England Roentgen Ray Society. Harvard Club of Boston.

Saturday, January 22

*10:00–11:30 a.m. Medical staff rounds. Peter Bent Brigham Hospital.

Monday, January 24

*12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital.

Tuesday, January 25

*9:00–10:00 a.m. Medical clinic. Dr. S. J. Thannhauser. Joseph H. Pratt Diagnostic Hospital.

*12:15–1:15 p.m. Clinicoroentgenological conference. Peter Bent Brigham Hospital.

2:00–4:00 p.m. Myasthenia gravis clinic. Out Patient Department, Massachusetts General Hospital.

Wednesday, January 26

*9:00–10:00 a.m. Urological Problems in Infants and Children. Dr. James Marvin Baty. Joseph H. Pratt Diagnostic Hospital.

*12:00 m. Clinicopathological conference. Children's Hospital.

*Open to the medical profession.

†Open to the public.

January 18. South End Medical Club. Notice elsewhere on this page.

January 18. New England Ophthalmological Society. Notice elsewhere on this page.

January 19. Boston Society of Biologists. Page 62.

January 19. New England Society of Physical Medicine. Notice elsewhere on this page.

February 10. Pentucket Association of Physicians. 8:30 p.m. Haverhill.

February 12. American Board of Obstetrics and Gynecology. Page 30, issue of January 6.

February 13. National Conference on Medical Service. Page 1, issue of January 6.

May 23 and 24. Massachusetts Medical Society. Annual meeting, Hotel Statler, Boston.

June 12–16. American Medical Association. Annual meeting, Chicago. Page 798, issue of November 18.

District Medical Society

WORCESTER

February 9. Worcester State Hospital, Worcester.

March 8. St. Vincent Hospital, Worcester.

April 12. Hahnemann Hospital, Worcester.

May 10. Annual meeting.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

Biochemistry of the Fatty Acids and their Compounds, the Lipids. By W. R. Bloor, professor of biochemistry and pharmacology, University of Rochester, Rochester, New York. American Chemical Society Monograph Series. 8°, cloth, 387 pp. New York.: Reinhold Publishing Corporation, 1943. $6.00.

This new monograph seeks to do for the fatty acids and lipids what has already been accomplished for the proteins and the carbohydrates. The work begins with chapters on the chemistry and the digestion and absorption of fats, followed by a consideration of the lipids of the blood and in the tissues. The concluding chapters treat of lipid metabolism and the lipid secretions and excretions.

Maternal Overprotection. By David M. Levy, M.D. 8°, cloth, 417 pp., with 36 tables. New York: Columbia University Press, 1943. $4.50.

This monograph on the influence of the mother on the child carried to the point where the results are harmful is based on a number of selected typical cases chosen from over 2000 collected by the former Institute of Child Guidance in New York City. The investigations are of a medical, social, psychometric and psychiatric character. The opening chapters have to do with the aims and methods and the selection of cases. Maternal overprotection or excessive maternal care of children is discussed under three main groups of maternal activity, which are discussed in separate chapters under the headings: excessive contact, infantilization and prevention of independent behavior. Maternal and paternal influences are discussed separately. Emphasis is placed on the physical, medical and mental problems and their treatment, prognosis and psychopathology. The last chapters consist of case studies of treatment and follow-up and case summaries. Since the children considered were followed into adult life, the maternal influence on the emotional and intellectual life was studied from infancy into full growth. New light has been thrown on the problem

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